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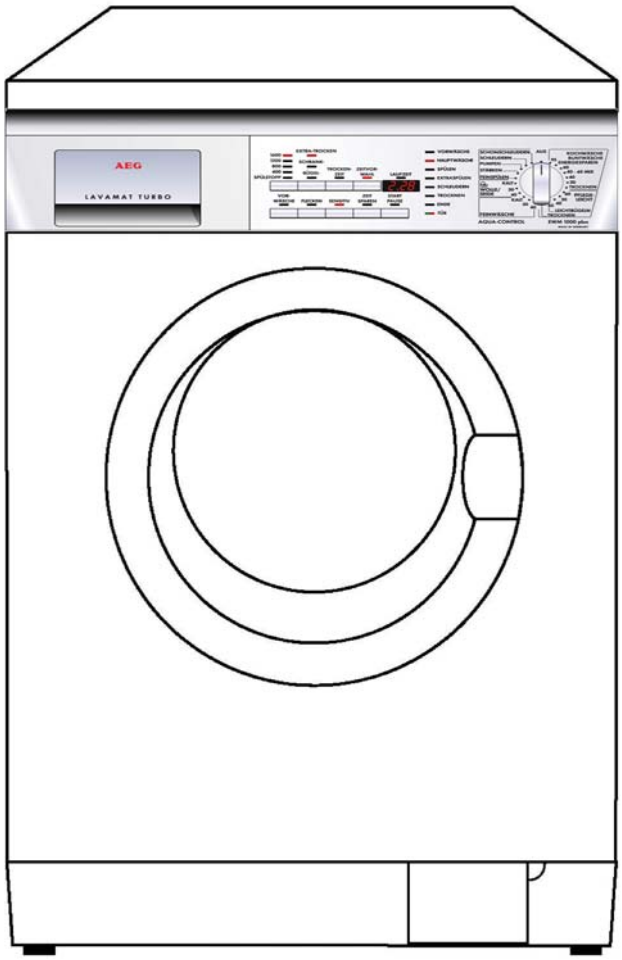
SERVICE MANUAL

WASHING APPLIANCES



WASHING MACHINES & WASHER-DRYERS

with EWM3000NEW electronic control and "AEG NEXXXT" display board

Production: ZP (Porcia-Italy)

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1 PURPOSE OF THIS MANUAL

The purpose of this manual is to provide service personnel (who already have the basic knowledge required for repairing washing machines and washer-dryers) with information on washing machines and washer-dryers with the EWM3000NEW electronic control system, which are produced in the factory in Porcia (Italy).
The EWM3000NEW is a new electronic control system which includes:

- a new two-pole, brushless asynchronous motor
- a new circuit board for controlling the motor (inverter)
- a main board
- a display board

The subjects dealt with in the manual are:

- General characteristics
- Control panel and programmes
- Technical specifications
- Troubleshooting

For detailed information on the water circuits and structural characteristics of these appliances, and on gaining access to their internal components, see the general Service Manual on Series P6000/Nexus washing machines and dryers (publication number 599 35 23-17).

2 IMPORTANT

- **The electrical components must be serviced by qualified personnel only**
- **Unplug the appliance before accessing internal components**

3 GENERAL SPECIFICATIONS - WM

Programme selection	▪ 24 positions with built-in main switch
Serial port	▪ Communications protocol DAAS-EAP up to 38400 baud
Voltage requirement	▪ 220/240 VAC ▪ 50/60 Hz
Type of washing system	▪ Jet-system
Type of rinsing system	▪ Jet-system
Motor	▪ Two-pole asynchronous
Spin speed	▪ 900 - 1600 RPM
Anti-unbalancing	▪ FUCS
Water fill control	▪ Solenoid valves
Detergent dispenser	▪ 3 compartments: prewash/stain remover, washing, softener ▪ 4 compartments: prewash/stain remover, washing, softener, bleach
Control of water level in drum	▪ Two pressure switches for anti-boiling ▪ Pressure switch for anti-overflow, Aqua control system ▪ Analogue pressure switch
Door interlocks	▪ Traditional (with PTC) ▪ Instantaneous (with or without microswitch) ▪ Magnetic
Power of heating element	▪ Up to 1950 W
Temperature control	▪ NTC sensor
Audible signalling system	▪ Traditional, included on display board
Sensors	▪ Water level sensor ▪ Turbidity sensor

4 GENERAL SPECIFICATIONS - WD

Programme selection	▪ 24 positions with built-in main switch
Serial port	▪ Communications protocol DAAS-EAP up to 38400 baud
Voltage requirement	▪ 220/240 VAC ▪ 50/60 Hz
Type of washing system	▪ Jet-system
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Motor	▪ Two-pole asynchronous
Spin speed	▪ 900 - 1600 RPM
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Water fill control	▪ Solenoid valves
Detergent dispenser	▪ 3 compartments: prewash/stain remover, washing, softener ▪ 4 compartments: prewash/stain remover, washing, softener, bleach
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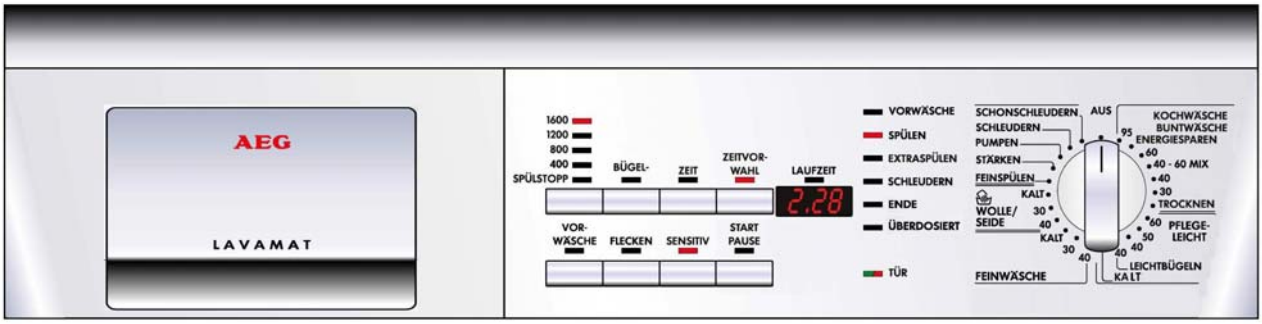
Door interlocks	▪ Traditional (with PTC) ▪ Instantaneous (with or without microswitch) ▪ Magnetic
Power of heating element	▪ Up to 1950 W
Temperature control	▪ NTC sensor
Audible signalling system	▪ Traditional, included on display board
Sensors	▪ Water level sensor ▪ Turbidity sensor

5 CONTROL PANEL

The control panel may vary depending on:

- type of control / display board
- programme selector
- design of front panel (the number of buttons and LEDs may vary)
- configuration of buttons

Example of WM control panel

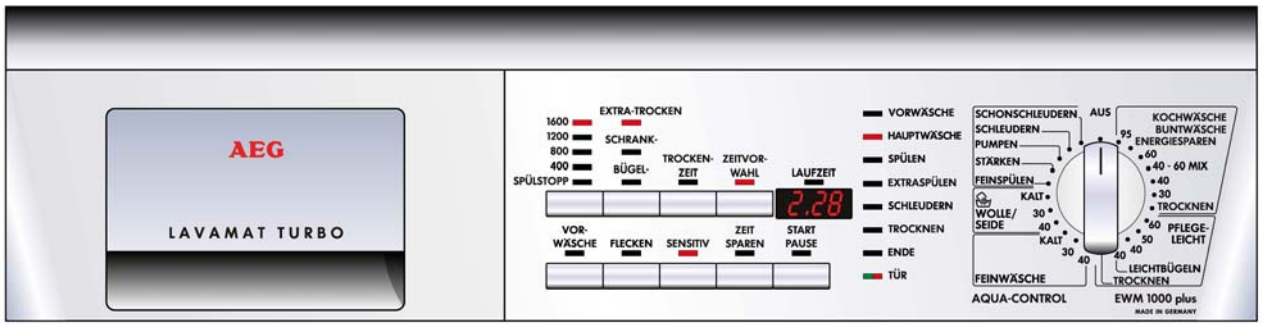


Buttons:
- maximum 8, positioned horizontally

LEDs
- maximum 27

Display:
- 3 digits formed by 24 red LEDs

Example of WD control panel



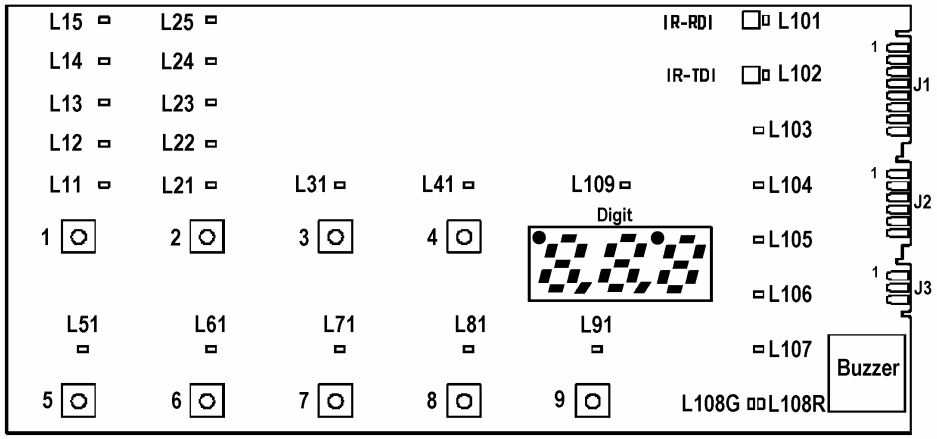
Buttons:
- maximum 9, positioned horizontally

LEDs
- maximum 27

Display:
- 3 digits formed by 24 red LEDs

5.1 CONTROL/DISPLAY BOARD

5.1.1 Version with display

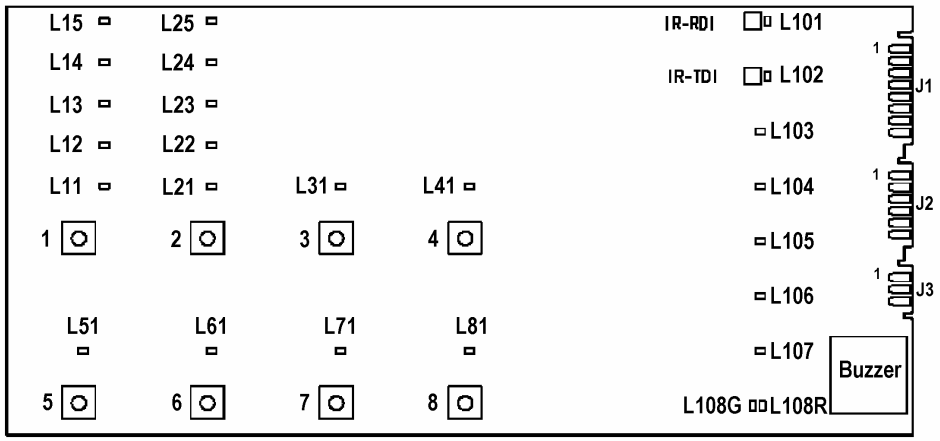


⇨ 3 digits

⇨ 27 LEDs: 26 red, 1 dual-colour (red and green)

⇨ 9 buttons, positioned horizontally

Version without display:



⇨ 25 LEDs: 24 red, 1 dual-colour (red and green)
⇨ 8 buttons, positioned horizontally

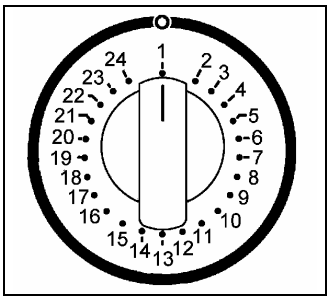
6 Washing programmes

6.1.1 Configuration of programmes

The table below lists the parameters that can be used to define the washing programmes.

Type of fabric	Cotton/linen, Synthetic fibres, Delicates, Wool, Hand wash, Mini
Special programmes	Soak, Rinses, Spin, Drain, Conditioner
Temperature	Normal, Maximum: initial and maximum temperatures that can be selected for a specific washing programme
Spin	Normal, Minimum, Maximum
Options (Normal / Possible)	Bleaches, Economy (Energy Label), Stains, Short, Very short, Reduced spin, Night cycle, Half-load, Easy-Iron, Rinse Hold, Extra Rinse, Pre-wash, Soak, Sensitive, Vigorous, No spin
Programme phases	Pre-wash, Wash, Rinses, Spin, End of cycle

6.2 Programme selector



The programme selector determines the type of washing cycle (e.g. water level, drum movement, number of rinses) and the washing temperature to be selected for each type of fabric.
The programme selector may be rotated in either direction (clockwise or counter-clockwise).

The first position is used to cancel the current programme (and, if the main ON/OFF switch is built into the programme selector, to switch the appliance off).

6.3 Start/Pause

Start: After selecting the programme and the desired options, press this button to start the cycle. If the delayed-start option has been selected, the count-down will begin, and will be shown on the display. The LED stops flashing and remains lit for the entire duration of the programme.

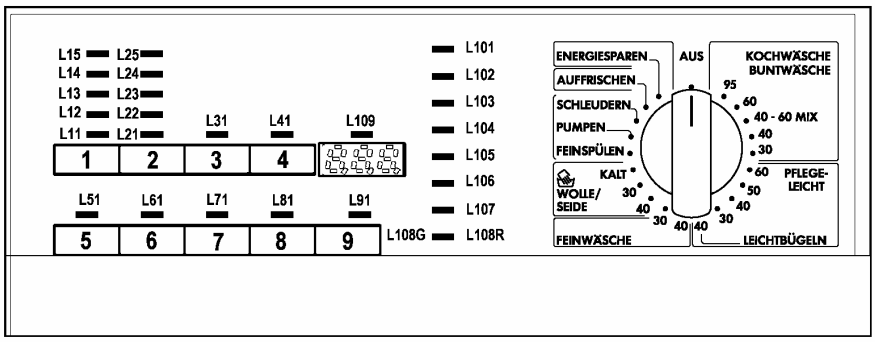
Pause: If the button is pressed again, the current programme is interrupted and the display (or the corresponding LED) begins to flash. When in pause mode, the door can be opened, but only if the machine is not performing the heating phase, the water level is not high, and the drum is stationary.

During the pause, the following modifications can be made to the programme:

- the OPTIONS for the cycle can be modified before the start of the phase in which they are activated
- the SPIN selection can be modified before the beginning of the final spin.

To re-start the programme, press START/PAUSE again.

6.4 Button functions



The washing programmes and the functions for each button vary according to the model, since these are determined by the procedure for the configuration of the appliance.

7 WASH PROGRAMMES AND OPTIONS

7.1 Possible programmes

The wash programmes can be configured to suit personal needs. The table below lists the standard programmes:

Programme		Temperature (°C)	No. of rinses	Final spin (RPM)
Cotton	**90**	85	3	450/650/850/1000/1200/ 1300/1400/1600
	90E	67	2	
	60	60	3	
	60E	57 (*)(**)	2	
	50	50	3	
	50/40E	44 (*)	2	
	40	42	3	
	30	30		
	cold	20		
Synthetics	**60**	60	3	Max. 900
	60/50E	42 (*)		
	50	50		
	40	40		
	30	30		
	cold	20		
Delicate fabrics	**40**	40	3	450/700
	30	30		
	cold	20		
Wool	**40**	40	3	Max. 1000
	30	35		
	cold	20		
Hand wash	**40**	40	3	Max. 1000
	30	35		
	cold	20		
Soak		30/20	----	----
Rinses		----	3	Max. 1600
Rinse for delicate fabrics		----	3	Max. 700
Fabric softener		----	1	Max. 1600
Drain		----	----	----
Spin		----	----	Max. 1600
Delicate spin		----	----	Max. 700
Short cycle		30	2	Max. 1000
Automatic		40	3	Max. 1200

(*) “energy label” programmes

(**)

Programme	Group	Temperature (°C)
COTTON 60 E	G20	51÷54
	G22	54÷57

7.2 Options for the wash cycle

Options are selected after the appliance is switched on and the desired programme is selected, but before the Start/Pause button is pressed.
When an option button is pressed, the corresponding LED lights up. When the button is pressed again, the option is cancelled and the LED switches off.

Possible options for programmes selected

			OPTIONS																	
			Stop with water in tub	Night cycle	Prewash	Soak	Stain removal	Vigorous	Daily	Short	Energy saving	Sensitive	Extra rinse	Bleach	Half-load	Easy iron	Lower spin speed	No spin	Delicate spin	Drying
Compatibility with programmes	COTTON	90°C																		
	COTTON / UNIVERSAL	60°C	X	X	X	X	X													
		50°C	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		40°C	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		30°C	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X
		Cold	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X
	AUTOMATIC	40°C	X		X		X						X				X	X		X
	SYNTHETICS	60°C	X	X	X	X	X	X	X	X	X	X	X			X	X	X		X
		50°C	X	X	X	X	X	X	X	X	X	X	X			X	X	X		X
		40°C	X	X	X	X	X	X	X	X	X	X	X			X	X	X		X
		30°C	X	X	X	X		X	X	X		X	X			X	X	X		X
		Cold	X	X	X	X		X	X	X		X	X			X	X	X		X
	SHORT CYCLE	30°C	X	X													X	X		
	FRESH UP	30°C	X														X	X		
	DELICATE FABRICS	40°C	X	X	X	X	X			X			X				X	X		
		30°C	X	X	X	X				X			X				X	X		
		Cold	X	X	X	X				X			X				X	X		
	SILK	30°C	X	X									X				X	X		
	WOOL - HAND WASH	40°C	X	X													X	X		
		30°C	X	X													X	X		
		Cold	X	X													X	X		
	VISCOSE (Fashion)	40°C	X		X	X	X			X			X				X	X		
	SOAK																			
	RINSES		X	X																
	SOFTENER		X	X																
	DRAIN																			
	SPIN																			
Compatibility with options	STOP W/WATER IN TUB		■		X	X	X	X				X								
	NIGHT CYCLE			■	X	X	X	X												
	PREWASH		X	X	■			X	X	X	X	X	X		X	X	X	X	X	X
	SOAK		X	X		■		X	X	X	X	X	X		X	X	X	X	X	X
	STAIN REMOVAL		X	X			■	X	X	X	X	X	X		X	X	X	X	X	X
	VIGOROUS		X	X	X	X	X	■				X	X	X	X	X	X	X	X	X
	DAILY		X	X	X	X	X		■			X	X	X	X	X	X	X	X	X
	SHORT		X	X	X	X	X			■		X	X	X	X	X	X	X	X	X
	ENERGY SAVING		X	X	X	X	X				■	X	X	X	X	X	X	X	X	X
	SENSITIVE		X	X	X	X	X	X	X	X	X	■	X	X	X		X	X	X	X
	EXTRA RINSE		X	X	X	X	X	X	X	X	X	X	■	X	X	X	X	X	X	X
	BLEACH		X	X				X	X	X	X	X	X	■	X	X	X	X	X	X
	HALF-LOAD		X	X	X	X	X	X	X	X	X	X	X	X	■	X	X	X	X	X
	EASY IRON		X	X	X	X	X	X	X	X	X		X	X	X	■	X	X		X
	LOWER SPIN SPEED		X		X	X	X	X	X	X	X	X	X	X	X	X	■		X	X
	NO SPIN		X		X	X	X	X	X	X	X	X	X	X	X	X		■		
	DELICATE SPIN																		■	
Phases in which option can be selected	PRESELECTION		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	PREWASH		X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
	WASH		X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
	RINSES		X														X	X	X	X
	SPIN																X	X	X	X

7.3 Description of options

7.3.1 Night cycle

- All the spin phases are eliminated. **Three** rinses are added to COTTON cycles and **one** rinse is added to SYNTHETICS cycles
- The appliance is shut down with water in the drum before the final spin
- No buzzer (if appliance is configured with a buzzer)
- To drain the water, select a drain or spin cycle

7.3.2 Stop with water in the drum (Rinse Hold)

- The appliance is shut down with water in the drum before the final spin
- To drain the water, select a drain or spin cycle.

7.3.3 Prewash

- A prewash phase is added at the beginning of the cycle. The water is heated to 30°C (or may be cold, if selected)
- In COTTON and SYNTHETICS cycles, a short spin (pulse spin) is performed before the wash phase
- This option is not available in WOOL and HAND WASH cycles

7.3.4 Soak

- A prewash phase is added (lasting 30', with the same agitation as in the wool cycle) at the beginning of the programme. The water is heated to 30°C (or may be cold, if selected)
- In COTTON and SYNTHETICS cycles, a short spin (pulse spin) is performed before the wash phase
- When combined with the delayed start option, a soak time from 30 minutes to 10 hours can be selected
- This option is not available in WOOL and HAND WASH cycles

7.3.5 Stain removal

- The motor operates for an extra 5 minutes after the water is heated to 40°C
- Water is run through the prewash/stain remover compartment to withdraw the special stain removing product
- This option is not available in DELICATE FABRICS, WOOL and HAND WASH cycles
- Agitation during washing changes from vigorous to normal

7.3.6 Short (daily)

- The structure of the wash phase in the COTTON - SYNTHETICS programmes is modified to obtain good performance in a short time (optimized for small loads)

7.3.7 Very Short

- The structure of the COTTON – SYNTHETICS – DELICATE FABRICS programmes is modified to obtain very short time wash times (optimized for small, lightly soiled loads)
- The number of rinses is reduced (one less rinse)
- The water level in the other two rinses is increased

7.3.8 Vigorous

- 10 minutes of normal agitation are added to the wash phase in the cotton programme

7.3.9 Energy saving / Energy label

- The COTTON 40°/50°/60°/90° - SYNTHETICS 50°/60° programmes are modified to reduce energy consumption
- The wash temperature in the 90°/60°/50° programmes is reduced; the temperature in the 40° programme is increased by 4°.
- The length of the wash phase is increased

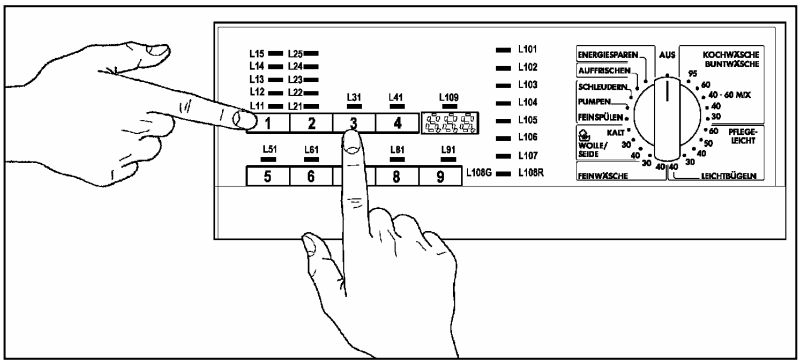
7.3.10 Sensitive

- One rinse is added to the COTTON – SYNTHETICS cycles
- During cotton cycles, agitation is reduced from vigorous to normal
- Intermediate spin phases are eliminated except for the final two, whose speed is reduced

7.3.11 Extra rinse

- Two rinses are added to COTTON cycles, and one rinse is added to SYNTHETICS – DELICATE FABRICS cycles
- Intermediate spin phases are eliminated except for the final two, which are reduced to 450 RPM

For appliances featuring a button, the corresponding LED lights when the button is pressed.
For appliances without a button, proceed as follows:



First select a COTTON, SYNTHETICS or DELICATE FABRICS cycle. Now, press buttons **1** and **3** at the same time for at least 2 seconds until the extra rinse LED lights up.
This option will remain selected during later cycles. To cancel the option, repeat the procedure: press buttons **1** and **3** at the same time for at least 2 seconds until the extra rinse LED switches off.

7.3.12 Bleach

- Water is run through the bleach compartment at the beginning of the first rinse in COTTON cycles
- Prewash is possible only if the appliance is equipped with three solenoid valves
- On models with two solenoid valves, the bleach option is not compatible with the prewash option

7.3.13 Half-load button

- Eliminates one rinse in COTTON programmes

7.3.14 Easy iron

- **In COTTON programmes:**
- Three rinses are added
- Intermediate spin phases are eliminated
- The final spin phase is pulsed
- An “unrolling” phase is included after the spin phase
- **In SYNTHETICS programmes:**
- The temperature in 50/60° cycles is reduced to 40°C
- Wash time is increased
- The cooling phase at the end of the wash phase is lengthened
- A rinse without spin is added
- An “unrolling” phase is included after the pulsed spin phase in the final rinse

7.3.15 Reduced spin speeds

- The speed during all spin phases is lowered, as shown on the table:

Maximum spin speed (RPM)	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
Reduced speed for COTTON (RPM)	450	450	450	450	500	550	600	650	700	750	800
Reduced speed for OTHER CYCLES (RPM)	450	450	450	450	450	450	450	450	450	450	450

7.3.16 No spin

- All spin phases are eliminated
- Three rinses are added to the COTTON cycle and one rinse is added to the SYNTHETICS cycle

7.3.17 Spin speed adjustment

- The speed of all spin phases in the cycle is reduced
- The last selected position can be used for NO SPIN and RINSE HOLD (stop with water in the drum)
- NO SPIN adds three rinses to the COTTON cycle and one rinse to the SYNTHETICS cycle

7.3.18 Reduced times (Quick)

- The COTTON – SYNTHETICS – DELICATE FABRICS programmes are modified to obtain very short time wash times (optimized for small, lightly soiled loads)
- The number of rinses is reduced (one less rinse)
- The water level in the other two rinses is increased
- When this option is selected, machine configuration is the same as in the SHORT – VERY SHORT programmes

7.3.19 Temperature adjustment

- Allows the wash temperature to be adjusted up to the max. temperature allowed for the cycle.
- Available during cycle selection; temperature can be adjusted (with machine in the pause mode) only if the heating phase has not yet begun.

7.3.20 Delayed start time

- **Models with digital display**

- When the programme is chosen, a delayed start ranging from 30 minutes to 23 hrs can be selected (☞ 30'☞ 60'☞ 90'☞ 2hrs☞ 3hrs...☞ 23hrs☞ 0hrs).
- During the delay period, the time decreases an hour at a time until 2hrs remain, then the decrease is 30 minutes at a time.
- To start the cycle immediately, after the delay time has been started, press the Start/Pause button, cancel the delay time by pressing the relative button, and press Start/Pause once again.

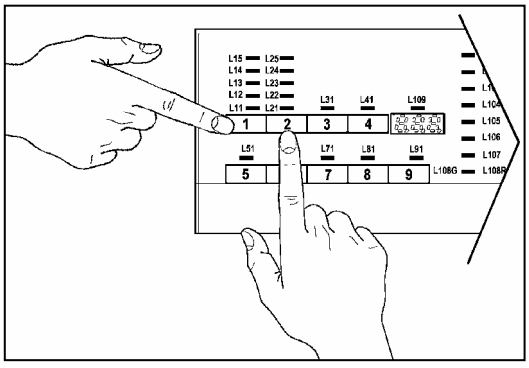
- **Models with LEDs**

- A pause is included before the programme begins. The delay time is indicated by the corresponding LEDs.
- To start the cycle after the delay time has been started, press the Start/Pause button, cancel the delay time by pressing the relative button, and press Start/Pause once again.

7.3.21 Disabling the buzzer

For models featuring a buzzer, this device can be disabled, in which case it will not sound during cycle selection or at the end of the cycle, though it remains enabled in the event of an alarm.

- To disable the buzzer, press buttons **1** and **2** at the same time for two seconds. The buzzer will remain disabled until the same procedure is repeated.



7.3.22 Electronic drying (WASHER-DRYERS – certain models only)

Three different degrees of drying can be selected for COTTON, and one for SYNTHETIC fabrics:

- Extra-dry (cotton only)
- Cupboard-dry (cotton and synthetics)
- Iron dry (cotton only)

The appliance automatically calculates the drying time is selected using “fuzzy logic”.
The drying phase may be performed automatically (i.e. without interrupting the programme) if selected together with a washing programme, or as a separate programme.

7.3.23 “Drying time” button

This button is used to select the drying time for COTTON and SYNTHETIC cycles. The time increases by 5 minutes each time it is pressed (from 10 to 130 minutes).
The drying function can be selected for automatic execution after a washing cycle, or as a separate programme.

7.4 Variation of rinses when options are selected

			No. of rinses with options				
			Normal	Sensitive	Super rinse	Night cycle Easy iron No spin	Night cycle Easy iron No spin Super rinse
PROGRAMMES	COTTON	Very short (Quick)	2	3	4	5	6
		Short (Daily normal)	3	4	5	6	7
		Short (79 min.)	2	3	4	5	6
		Energy saving	2	3	4	5	6
		Normal	3	4	5	6	7
	SYNTHETICS	Very short (Quick)	2	3	3	3	4
		Short (Daily)	3	4	4	4	5
		Short (Daily)*	2	3	3	3	4
		Energy saving	3	4	4	4	5
		Normal	3	4	4	4	5
	DELICATE FABRICS	Very short (Quick)	2	-	3	-	-
		Normal	3	-	4	-	-
	WOOL	Normal	3	-	-	-	-
	HAND WASH	Normal	3	-	-	-	-
	SILK	Normal	2	3	3	3	5

N.B.: The HALF-LOAD option subtracts one rinse from all COTTON programmes, except for the VERY SHORT programme.
- The turbidity sensor operates during Short Cotton and Normal Cotton programmes, only. It adds two rinses.
* WM with sensors, only

7.5 Display (certain models only)

The following information appears on the display:

- **Three flashing dashes** appear when the appliance is switched on
- **The duration of the wash programme** appears when the programme is selected. This value is the amount of time necessary for washing the maximum load of laundry for the type of programme selected. When the programme is started, the time counts down minute by minute.
- **The end of the programme** is indicated by a **"0"** (when the door can be opened)
- **Delayed start** is selected using the relative button. When the START/PAUSE button is pressed, the time begins counting down and decreases an hour at a time until 2 hrs remain, then the decrease is 30 minutes at a time.
- **An alarm code** indicates a malfunction has occurred.

7.6 LEDs

These LEDs display different information depending on machine configuration; the end-of-cycle LED is present on all models.

Type of LED	Function
Prewash	This LED lights up if the selected programme includes a prewash, and lights up during the prewash phase when the programme is executed.
Wash	This LED lights up if the selected programme includes a wash phase, and lights up during the wash phase when the programme is executed.
Prewash/ Wash	This LED lights up if the selected programme includes a prewash or wash phase, and lights up during the prewash or wash phase when the programme is executed.
Rinse	This LED lights up if the selected programme includes rinses, and lights up during the rinses when the programme is executed.
Spin	This LED lights up if the selected programme includes a spin phase, and lights up during the spin phase when the programme is executed.
Drain	This LED lights up if the selected programme includes a drain phase, and lights up during the drain phase when the programme is executed.
Extra rinse	This LED lights up when the programme is chosen if an extra rinse has been selected/stored (if an extra rinse is included in the programme), and lights up during the extra rinse when the programme is executed.
Rinse Hold	This LED lights up when the programme is chosen if this option has been selected, and at the end of the cycle when the machine stops with water in the drum.
Cycle in progress	This LED lights up while the programme is being executed.
End of cycle	This LED lights up at the end of the cycle; it is also used to signal alarms.
Filter clogged	This LED lights up at the end of the cycle if the drain filter is clogged.
Detergent overload	This LED lights up at the end of the cycle if too much detergent has been used.
ON/OFF	This LED lights up when the machine is switched on.
Door	- This LED lights up when the door is locked by the safety system. - The LED switches off when the door is no longer locked. - The LED flashes while the door is being unlocked (which occurs masterly on models with a safety system equipped with a PTC)
Time until end of cycle	This LED lights up when the display is showing the time remaining until the end of the cycle.
Drying	Lights during selection if the programme includes a drying cycle and during the cycle when it is in progress.

8 WASH PROGRAMMES

8.1 Standard Cotton / Linen programmes: cold-30°- 40°- 60°/60°- 90° (w/o options)

NO.	PHASE	Description		Drain Pump	Recirculation Pump	Deterg. Disp.	Motor operation			CYCLE				
							RPM	Movem.	Pause	90°	60°/60°	40°	30°	*
1	Prewash	Calibration	Level	ON	OFF		No movement			DRAIN				
2		Flow calibration	Level	OFF	OFF	PW	No movement			WATER FILL				
3		Maintain water softener	Time	OFF	OFF	PW	55	4	12	1 min.				
4		Water fill	Level	OFF	OFF	PW	No movement			COT_FIRST_PW_LEV				
5		Maintain & Top up level	Time	OFF	ON(35/15)	PW	55	4	12	4 min. COT_SEC_PW_LEV				
6		Heating	Temperature	OFF	ON(35/15)	PW	55	4	12	Heating to 30°				20°
7		Maintain	Time	OFF	ON(35/15)	PW	55	4	12	10 min.				
8		Drain	Time	ON	OFF		No movement			Empty + 14 Sec.				
9		Spin	Time	ON	OFF		IMP C0			4 min. with OP check				
10	Wash	Calibration	Level	ON	OFF		No movement			DRAIN				
11		Flow calibration	Level	OFF	OFF	PW	No movement			WATER FILL				
12		Maintain water softener	Time	OFF	OFF	PW	55	4	12	1 min.				
13		Water fill	Level	OFF	OFF	W	No movement			COT_FIRST_W_LEV				
14		Maintain & Top up level	Time	OFF	ON(35/15).	W	55	8	8	5 min. COT_SECOND_NW_LEV				
15		Heating	Temperature	OFF	ON(35/15)	W	55	8	8	40°				
16		Heating	Temperature	OFF	ON(35/15)	W	55	8	8	60°	60°	42°	30°	20°
17		Heating	Temperature	OFF	OFF	W	55	8	8	85°				
18		Maintain	Time	OFF	ON(35/15)	W	55	10	3	2 min.	5 min.	5 min.	Ref. T° 5 min.	Ref. T° 5 min.
19		Maintain	Time	OFF	ON(35/15)	W	55	10	3	3 min.				
20		Heating	Time	OFF	OFF	W	55	10	3		5 min.			
21		Maintain	Time	OFF	ON(35/15)	W	55	10	3		60°	42°	30°	
22		Maintain	Time	OFF	ON(35/15)	W	55	10	3	5 min.	10 min.			
23		Maintain	Time	OFF	ON(35/15)	W	55	10	3			15 min.	15 min.	15 min.
24		Maintain	Time	OFF	OFF	W	55	8	8	10 min.	10 min.	25 min.	25 min.	25 min.
25		Cooling	Time	OFF	OFF	W	55	8	8	4 litres				
26		Maintain	Time	OFF	ON(35/15)	W	55	4	12	2 min.				
27		Calibration of turbidity sensor	Time	ON	OFF		No movement			20 sec.				
28		Drain	Time	ON	OFF		No movement			Empty + 14 Sec.				
29		Spin	Time	ON	OFF		IMP_IN_DGN			5 min. with OP check				
30		Drain	Time	ON	OFF		No movement			20 sec.				

(The above values are approximate, only)

PW = Prewash W = Wash AS = Anti-foam control

☐ Only if cycle begins with a wash phase and not with a prewash

8.2 Rinses in Cotton / Linen cycles: cold-30°- 40°- 60°/60°- 90° (w/o options)

NO.	PHASE	Description		Drain Pump	Recirculation Pump	Deterg. Disp.	Motor operation			CYCLE				
							RPM	Movem.	Pause	90°	60°	40°	30°	*
31	1st Rinse	Water fill	Level	OFF	OFF	BL	OFF			COT_FIRST_N_R_LEV				
32		Maintain & Top up level	Time	OFF	ON(35/15)	W	55	10	3	5 min. COT_REF_N_R_LEV				
33		Drain	Time	ON	OFF		No movement			Empty + 14 sec.				
34		Spin	Time	ON	OFF		IMP_IN_DGN			5 min.				
35	2nd Rinse	Water fill	Level	OFF	OFF	W	OFF			COT_INT_N_R_LEV				
36		Maintain & Top up level	Time	OFF	ON(35/15)	W	55	8	8	5 min. COT_REF_N_R_LEV				
37		Turbidity measurement	Time	OFF	OFF		No movement			6 sec.				
38		Drain	Time	ON	OFF		No movement			Empty + 14 sec				
39		Spin	Time	ON	OFF		IMP_IN_DGN			5 min.				
40	Final rinse (fabric softener)	Water fill	Level	OFF	OFF	SF	OFF			COT_LAST_N_R_LEV				
41		Maintain	Time	OFF	OFF		55	8	8	30 sec.				
42		Water fill	Level	OFF	OFF	SF	No movement			Qfs (4 Litres)				
43		Maintain & Top up level	Time	OFF	ON(35/15)	W	55	10	3	8 min. COT_REF_N_R_LEV				
44		Drain	Time	ON	OFF		No movement			Empty + 14 sec				
45		Spin	Time	ON	OFF		IMPC_DGN			12 min.				

(The above values are approximate, only)

W = Wash BL = Bleach SF = Fabric softener

8.3 Cotton / Linen programmes: Energy saving 90°, “energy label” 60°/50°- 40° (w/o options)

NO.	PHASE	Description		Drain Pump	Recirculation Pump	Deterg. Disp.	Motor operation			CYCLE		
							RPM	Movem.	Pause	90°	60°/50°	40°
1	Prewash	Calibration	Level	ON	OFF		No movement			DRAIN		
2		Flow calibration	Level	OFF	OFF	PW	No movement			WATER FILL		
3		Maintain water softener	Time	OFF	OFF	PW	55	4	12	1 min.		
4		Water fill	Level	OFF	OFF	PW	No movement			COT_FIRST_PW_LEV		
5		Maintain & Top up level	Time	OFF	ON(35/15)	PW	55	4	12	4 min. COT_SEC_PW_LEV		
6		Heating	Temperature	OFF	ON(35/15)	PW	55	4	12	Heating to 30°		
7		Maintain	Time	OFF	ON(35/15)	PW	55	4	12	10 min.		
8		Drain	Time	ON	OFF		No movement			Empty + 14 sec.		
9		Spin	Time	ON	OFF		IMP_C0			4 min. with OP check		
10	Wash	Calibration	Level	ON	OFF		No movement			DRAIN		
11		Flow calibration	Level	OFF	OFF	PW	No movement			WATER FILL		
12		Maintain water softener	Time	OFF	OFF	PW	55	4	12	1 min.		
13		Water fill	Level	OFF	OFF	W	No movement			COT_FIRST_PW_LEV		
14		Maintain & Top up level	Time	OFF	OFF	W	40	10	3	5 min. COT_FIRST_W_LEV		
15		Maintain without Top up	Time	OFF	ON(35/15)	W	40	10	3	1 min.		
16		Maintain	Time	OFF	OFF	W	No movement			22 sec.		
17		Maintain	Time	OFF	OFF	W	40	10	3	1 min. COT_SEC_EW_LEV		
18		Maintain	Time	OFF	ON(35/15)	W	40	10	3	2 min.		
19		Maintain	Time	OFF	OFF	W	No movement			22 sec.		
20		Heating	Temperature	OFF	OFF	W	55	8	8			44°
21		Heating	Temperature	OFF	OFF	W	55	10	3	67°	54°	30 min.
22		Maintain	Time	OFF	ON(35/15)	W	55	10	3	Ref. T° 5 min.	15 min.	
23		Maintain	Time	OFF	OFF	W	No movement				30 sec.	30 sec.
24		Heating	Time	OFF	OFF	W	55	10	3	67°	*	44°
							40° : 55/8/8					
25		Maintain	Time	OFF	ON(35/15)	W	55	8	8			10 min.
26		Maintain	Time	OFF	ON(35/15)	W	55	10	3	25 min.	20 min.	20 min.
27		Maintain	Time	OFF	ON(35/15)	W	55	8	8			5 min.
28		Maintain	Time	OFF	OFF	W	55	10	3	5 min.	5 min.	
29		Maintain	Time	OFF	ON(35/15)	W	55	10	3		15 min.	
30		Drain	Time	ON	OFF		No movement			Empty + 14 sec.		
31		Spin	Time	ON	OFF		IMP_IN_DGN			5 min. with OP check		
32		Drain	Time	ON	OFF		No movement			20 sec.		

(The above values are approximate, only)

W = Wash PW = Prewash AS = Anti-foam control

* Variable T° (45°-53°)

Only if cycle begins with a wash phase and not with a prewash

8.4 Rinses in Cotton / Linen programmes: Energy saving 90°, “energy label” 40°- 60° (w/o options)

NO.	Phase	Description		Drain Pump	Recirculation Pump	Deterg. Disp.	Motor operation			CYCLE		
							RPM	Movem.	Pause	90°	60°	40°
33	1st Rinse	Water fill	Level	OFF	OFF	BL	No movement			COT_FIRST_AND_R_LEV		
34		Maintain & Top up level	Time	OFF	ON (COT_REF_ER_LEV)	W	55	10	3	8 min. (5 min. for 99 min. cycle) COT_REF_N_R_LEV		
35		Drain	Time	ON	OFF		No movement			Empty + 14 sec.		
36		Spin	Time	ON	OFF		IMP_IN_DGN			5 min.		
37	Final rinse (fabric softener)	Water fill	Level	OFF	OFF	SF	No movement			COT_LAST_AND_R_LEV		
38		Maintain	Time	OFF	OFF		55	8	8	30 sec.		
39		Water fill	Level	OFF	OFF	SF	No movement			Qfs		
40		Maintain & Top up level	Time	OFF	ON (COT_REF_ER_LEV)	W	55	10	3	8 min. (7 min. for 99 min. cycle.) COT_REF_N_R_LEV		
41		Drain	Time	ON	OFF		No movement			Empty + 14 sec		
42		Spin	Time	ON	OFF		IMPC_DGN			12 min.		

(The above values are approximate, only)
W = Wash BL = Bleach SF = Fabric softener

8.5 Synthetics programmes: cold–30°–40°–50°–60° (w/o options)

NO.	PHASE	Description		Drain Pump	Recirculation Pump	Deterg. Disp.	Motor operation			CYCLE				
							RPM	Movem.	Pause	60°	50°	40°	30°	*
1	PREWASH	Calibration	Level	ON	OFF		No movement			DRAIN				
2		Flow calibration	Level	OFF	OFF	PW	No movement			WATER FILL				
3		Maintain water softener	Time	OFF	OFF	PW	55	4	12	1 min.				
4		Water fill	Level	OFF	OFF	PW	No movement			COT_FIRST_PW_LEV				
5		Maintain & Top up level	Time	OFF	ON(35/15)	PW	55	4	12	4 min. COT_SEC_PW_LEV				
6		Heating	Temperature	OFF	ON(35/15)	PW	55	4	12	Heating to 30°				20°
7		Maintain	Time	OFF	ON(35/15)	PW	55	4	12	10 min.				
8		Drain	Time	ON	OFF		No movement			Empty + 14 sec.				
9		Spin	Time	ON	OFF		IMP_C0			4 min. with OP check				
10	WASH	Calibration	Level	ON	OFF		No movement			DRAIN				
11		Flow calibration	Level	OFF	OFF	PW	No movement			WATER FILL				
12		Maintain water softener	Time	OFF	OFF	PW	55	4	12	1 min.				
13		Water fill	Level	OFF	OFF	W	No movement			SYN_FIRST_W_LEV				
14		Maintain & Top up level	Time	OFF	ON(35/15)	W	55	8	8	3 min. SYN_SECOND_W_LEV				
15		Heating	Temperature	OFF	ON(35/15)	W	55	10	3	60°	50°	40°	30°	20°
16		Maintain	Time	OFF	ON(35/15)	W	55	10	3	10 min.	10 min.	10 min.	10 min.	20° 20 min.
17		Heating	Time	OFF	ON(35/15)	W	55	10	3	60°	50°	40°	30°	
18		Maintain	Time	OFF	OFF	W	55	10	3	15 min.	15 min.	15 min.	15 min.	
19		Maintain	Temperature	OFF	ON(35/15)	W	55	10	3					15 min.
20		Cooling	Time	OFF	OFF	W	55	8	8	Qc				
21		Maintain	Time	OFF	ON(35/15)	W	55	4	12	2 min.				
22		Drain	Time	ON	OFF		No movement			Empty + 14 sec.				
23		Timed drain	Time	ON	OFF		55	4	12	1 min.				
24		Drain	Time	ON	OFF		No movement			6 sec.				

(The above values are approximate, only)
PW = Prewash W = Wash

8.6 Rinses in synthetics cycles: cold–30°–40°–50°–60° (w/o options)

NO.	Phase	Description		Drain Pump	Recirculation Pump	Deterg. Disp.	Motor operation			CYCLE				
							RPM	Movem.	Pause	90°	60°	40°	30°	*
25	1st Rinse	Water fill	Level	OFF	OFF	BL	No movement			SYN_FIRST_R_LEV				
26		Wait	Time	OFF	OFF		No movement			6 Sec.				
27		Maintain & Top up level	Time	OFF	ON (35/15)	W	55	10	3	3 min. SYN_REF_R_LEV				
28		Drain	Time	ON	OFF		No movement			Empty + 14 sec.				
29		Drain	Time	ON	OFF		55	4	12	1 min.				
30		Drain	Time	ON	OFF		No movement			6 sec.				
31	2nd Rinse	Water fill	Level	OFF	OFF	BL	No movement			SYN_INT_R_LEV				
32		Wait	Time	OFF	OFF		No movement			6 sec.				
33		Maintain & Top up level	Time	OFF	ON (35/15)	W	55	10	3	3 min. SYN_REF_R_LEV				
34		Drain	Time	ON	OFF		No movement			Empty + 14 sec.				
35		Maintain	Time	ON	OFF		55	4	12	1 min.				
36		Wait	Time	ON	OFF		No movement			6 sec.				
37		Spin	Time	ON	OFF		IMP_C0			4 min. with OP check				
38		Drain	Time	ON	OFF		No movement			6 sec.				
39	Final rinse (fabric softener)	Water fill	Level	OFF	OFF	SF	OFF			SYN_LAST_R_LEV				
40		Maintain	Time	OFF	OFF		55	10	3	30 sec				
41		Water fill	Level	OFF	OFF	SF	55	10	3	Qfs				
42		Maintain & Top up level	Time	OFF	ON (35/15)	W	55	10	3	5 min. SYN_REF_R_LEV				
43		Drain	Time	ON	OFF		No movement			Empty + 14 sec.				
44		Spin	Time	ON	OFF		IMP_5			6.5 min. with OP check				

(The above values are approximate, only)

BL = Bleach SF = Fabric softener W = Wash AS = Anti-foam control

8.7 Programmes for delicate fabrics: cold–30 -40° (w/o options)

NO.	PHASE		Function		Drain Pump	Recirculation Pump	Deterg. Disp.	Motor operation			CYCLE		
								RPM	Movem.	Pause	40°	30°	*
1	PREWASH		Calibration	Level	ON	OFF		No movement			Drain		
2			Flow calibration	Level	OFF	OFF	PW	No movement			Water fill		
3			Maintain water softener	Time	OFF	OFF	PW	55	4	12	1 min.		
4			Water fill	Level	OFF	OFF	PW	No movement			DEL_FIRST_W_LEV		
5			Maintain & Top up level	Time	OFF	ON (35/15)	PW	55	4	12	1 min. COT_FIRST_W_LEV		
6			Maintain & Top up level	Time	OFF	ON (35/15)	PW	55	4	12	3 min. AB_LEV		
7			Heating	Temperature	OFF	ON (35/15)	PW	55	4	12	Heating to 30°		20°
8			Maintain	Time	OFF	ON (35/15)	PW	55	4	12	10 min		
9			Drain	Time	ON	OFF		No movement			Empty + 14 sec.		
10	WASH		Calibration	Level	ON	OFF		No movement			Drain		
11			Water fill	Level	OFF	OFF	W	No movement			SOFT_LEV		
12			Maintain & Top up level	Time	OFF	OFF	W	55	4	12	1 min.		
13			Water fill	Level	OFF	OFF	W	No movement			DEL_FIRST_W_LEV		
14			Water fill	Level	OFF	OFF	W	55	8	8	Qs1		
15			Maintain & Top up level	Time	OFF	ON (35/15)	W	55	4	12	1 min. DEL_SEC_W_LEV		
16			Heating	Temperature	OFF	ON (35/15)	W	55	4	12	40°	30°	20°
17			Maintain	Time	OFF	ON (35/15)	W	55	4	12	Ref. T° 10 min	Ref. T° 10 min	Ref. T° 10 min
18			Heating	Time	OFF	OFF	W	55	4	12	40°	30°	20°
19			Maintain	Time	OFF	ON (35/15)	W	55	4	12	10 min.	10 min.	10 min.
20			Drain	Time	ON	OFF		No movement			Empty + 14 sec.		
21	Rinses	1st Rinse	Water fill	Level	OFF	OFF	BL	No movement			DEL_FIRST_R_LEV		
22			Maintain & Top up level	Time	OFF	ON (35/15)	W	55	4	12	3 min. DEL_REF_R_LEV		
23			Drain	Time	ON	OFF		No movement			Empty + 14 sec.		
24			Drain	Time	ON	OFF		55	4	12	1 min.		
25		2nd Rinse	Water fill	Level	OFF	OFF	W	No movement			DEL_INT_R_LEV		
26			Maintain & Top up level	Time	OFF	ON (35/15)	W	55	4	12	3 min. DEL_REF_R_LEV		
27			Drain	Time	ON	OFF		No movement			Empty + 14 sec.		
28			Drain	Time	ON	OFF		55	4	12	1 min.		
29		Final rinse (fabric softener	Water fill	Level	OFF	OFF	SF	No movement			DEL_LAST_R_LEV		
30			Maintain	Time	OFF	OFF		55	4	12	30 sec.		
31			Water fill	Level	OFF	OFF	SF	55	4	12	Qfs (4 Litres)		
32			Maintain & Top up level	Time	OFF	ON (35/15)	W	55	4	12	3 min. DEL_REF_R_LEV		
33			Drain	Time	ON	OFF		No movement			Empty + 14 sec.		
34			Drain	Time	ON	OFF		55	4	12	1 min.		
35			Spin	Time	ON	OFF		IMP_7			4.5 min.		

(The above values are approximate, only) PW = Prewash W = Wash SF = Fabric softener BL = Bleach

8.8 Wash programmes for Wool: cold–30°-40°

NO.	PHASE		Function		Drain Pump	Recirculation Pump	Deterg. Disp.	Motor operation			CYCLE		
								RPM	Movem.	Pause	40°	30°	*
1	WASH		Calibration	Level	ON	OFF		No movement			Drain		
2			Water fill	Level	OFF	OFF	W	No movement			SOFT_LEV		
3			Maintain & Top up level	Time	OFF	OFF	W	35	1	40	1 min.		
4			Water fill	Level	OFF	OFF	W	No movement			WOOL_FIRST_W_LEV		
5			Maintain & Top up level	Time	OFF	ON (35/15)	W	55	1	40	1 min. WOOL_SEC_W_LEV		
6			Heating	Temperature	OFF	ON (35/15)	W	55	1	40	38°	33°	20°
7			Maintain	Time	OFF	ON (35/15)	W	55	1	40	Ref. T° 15 min.	Ref. T° 15 min.	Ref. T° 15 min.
8			Drain	Time	ON	OFF		No movement			Empty + 14 sec.		
9	Rinses	1st Rinse	Water fill	Level	OFF	OFF	W	No movement			WOOL_INT_R_LEV		
10			Maintain & Top up level	Time	OFF	ON (35/15)	W	55	1	40	3 min. WOOL_REF_R_LEV		
11			Drain	Time	ON	OFF		No movement			Empty + 14 sec.		
12			Drain	Time	ON	OFF		55	4	12	1 min.		
13		2nd Rinse	Water fill	Level	OFF	OFF	W	No movement			WOOL_INT_R_LEV		
14			Maintain & Top up level	Time	OFF	ON (35/15)	W	55	1	40	3 min. WOOL_REF_R_LEV		
15			Drain	Time	ON	OFF		No movement			Empty + 14 sec.		
16			Drain	Time	ON	OFF		55	4	12	1 min.		
17		Final rinse (fabric softener	Water fill	Level	OFF	OFF	SF	No movement			WOOL_LAST_R_LEV		
18			Maintain	Time	OFF	OFF		35	1	40	30 sec.		
19			Water fill	Level	OFF	OFF	SF	35	1	40	Qfs (4 Litres)		
20			Maintain & Top up level	Time	OFF	ON (35/15)	W	35	1	40	5 min. WOOL_REF_R_LEV		
21			Drain	Time	ON	OFF		No movement			Empty + 14 sec.		
22			Spin	Time	ON	OFF		IMP_4_MOV			4 min.		

(The above values are approximate, only)

W = Wash SF = Fabric softener

8.9 Hand wash programmes: cold–30-40°

NO.	PHASE		Function		Drain Pump	Recirculation Pump	Deterg. Disp.	Motor operation			CYCLE		
								RPM	Movem.	Pause	40°	30°	*
1	WASH		Calibration	Level	ON	OFF		No movement			Drain		
2			Water fill	Level	OFF	OFF	W	No movement			SOFT_LEV		
3			Maintain & Top up level	Time	OFF	OFF	W	35	1	57	1 min.		
4			Water fill	Level	OFF	OFF	W	No movement			HAND_FIRST_W_LEV		
5			Maintain & Top up level	Time	OFF	ON (35/15)	W	35	1	57	1 min. HAND _SEC_W_LEV		
6			Heating	Temperature	OFF	ON (35/15)	W	35	1	57	38°	33°	20°
7			Maintain	Time	OFF	ON (35/15)	W	35	1	57	Ref. T° 15 min.	Ref. T° 15 min.	Ref. T° 15 min.
8			Drain	Time	ON	OFF		No movement			Empty + 14 sec.		
9	Rinses	1st Rinse	Water fill	Level	OFF	OFF	W	No movement			HAND _INT_R_LEV		
10			Maintain & Top up level	Time	OFF	ON (35/15)	W	35	1	57	3 min. HAND _REF_R_LEV		
11			Drain	Time	ON	OFF		No movement			Empty + 14 sec.		
12			Drain	Time	ON	OFF		55	4	12	1 min.		
13		2nd Rinse	Water fill	Level	OFF	OFF	W	No movement			HAND _INT_R_LEV		
14			Maintain & Top up level	Time	OFF	ON (35/15)	W	35	1	57	3 min. HAND _REF_R_LEV		
15			Drain	Time	ON	OFF		No movement			Empty + 14 sec.		
16			Drain	Time	ON	OFF		55	4	12	1 min.		
17		Final rinse (fabric softener	Water fill	Level	OFF	OFF	SF	No movement			HAND _LAST_R_LEV		
18			Maintain	Time	OFF	OFF		35	1	40	30 sec.		
19			Water fill	Level	OFF	OFF	SF	35	1	40	QfiQfs (4l)		
20			Maintain & Top up level	Time	OFF	ON (35/15)	W	35	1	57	5 min. HAND _REF_R_LEV		
21			Drain	Time	ON	OFF		No movement			Empty + 14 sec.		
22			Spin	Time	ON	OFF		IMP_4_MOV			4 min.		

(The above values are approximate, only)

W = Wash SF = Fabric softener

8.10 Cotton/Linen wash programmes with flow meter: cold-90°-60°-40°-30° (w/o options)

NO.	PHASE	Function		Drain Pump	Recirculation Pump	Deterg. Disp.	Motor operation			CYCLE				
							RPM	Movem.	Pause	90°	60°	40°	30°	*
1	PREWASH	Calibration	Level	ON	OFF		No movement			Drain				
2		Flow calibration	Level	OFF	OFF	PW	No movement			Water fill				
3		Maintain water softener	Time	OFF	OFF	PW	55	4	12	1 min.				
4		Water fill	Level	OFF	OFF	PW	No movement			COT_FIRST_PW_LEV				
5		Maintain & Top up level	Time	OFF	ON (35/15)	PW	55	4	12	4 min. COT_SEC_PW_LEV				
6		Heating	Temperature	OFF	ON (35/15)	PW	55	4	12	Heating to 30°				20°
7		Maintain	Time	OFF	ON (35/15)	PW	55	4	12	10 min.				
8		Drain	Time	ON	OFF		No movement			Empty + 14 sec.				
9		Spin	Time	ON	OFF		IMP CO			4 min.				
10	WASH	Calibration	Level	ON	OFF		No movement			Drain				
11		Water fill	Level	OFF	OFF	W	No movement			COT_FIRST_W_LEV				
12		Maintain & Top up level	Time	OFF	ON (35/15)	W	55	8	8	COT_SEC_NW_LEV 5 min.				
13		Heating	Temperature	OFF	ON (35/15)		90° 55/8/8 Others : E99_ZP_MOV			60°	60°	40°	30°	20°
14		Heating	Temperature	OFF	OFF		55	8	8	85°				
15		Maintain	Time	OFF	ON (35/15)		55	10	3	10 min.				
16		Maintain Heating	Time	OFF	ON (35/15)		E99_ZP_MOV				5 min.	42° 25 min.	30° 5 min.	20° 5 min.
17		Maintain Heating	Time	OFF	OFF		E99_ZP_MOV				5 min.			
18		Wait	Time	OFF	ON (35/15)		E99_ZP_MOV				60°.		30°	
19		Maintain	Time	OFF	OFF		90° 55/10/3 Others : E99_ZP_MOV			10 min.				
20		Maintain	Time	OFF	ON (35/15)		E99_ZP_MOV				10 min.	15 min.	15 min.	15 min.
21		Maintain	Time	OFF	OFF		E99_ZP_MOV				10 min.	25 min.	25 min.	25 min.
22		Cooling	Time	OFF	OFF	W	55	8	8	Qc				
23			Time	OFF	ON (35/15)		55	4	12	2 min.				
24		Drain	Time	ON	OFF		No movement			Empty + 14 sec.				

(The above values are approximate, only)
PW = Prewash W = Wash

8.11 Rinses in Cotton/Linen programmes, with flow meter: cold-90°-60°-40°30° (w/o options)

NO.	Phase	Description		Drain Pump	Recirculation Pump	Deterg. Disp.	Motor operation			CYCLE				
							RPM	Movem.	Pause	90°	60°	40°	30°	*
25	1st Rinse	Water fill	Level	OFF	OFF	BL	No movement			COT_FIRST_N_R_LEV				
26		Maintain & Top up level	Time	OFF	ON (35/15)	BL	55	10	3	COT_REF_N_R_LEV 5 min.				
27		Drain	Time	ON	OFF		No movement			Empty + 14 sec.				
28		Spin	Time	ON	OFF		IMP_IN_DGN			5 min.				
29	2nd Rinse	Water fill	Level	OFF	OFF	BL	No movement			COT_INT_N_R_LEV				
30		Maintain	Time	OFF	ON (35/15)	BL	55	8	8	COT_REF_N_R_LEV 5 min.				
31		Drain	Time	ON	OFF		No movement			Empty + 14 sec.				
32		Spin	Time	ON	OFF		IMP_IN_DGN			5 min.				
33	Final rinse (fabric softener)	Water fill	Level	OFF	OFF	BL	No movement			COT_LAST_N_R_LEV				
34		Maintain	Time	OFF	OFF		55	8	8	30 sec.				
35		Water fill	Time	OFF	OFF	SF	55	8	8	90 dl				
36		Maintain & Top up level	Time	OFF	ON (35/15)	BL	55	10	3	COT_REF_N_R_LEV 8 min.				
37		Drain	Time	ON	OFF		No movement			Empty + 14 sec.				
38		Spin	Time	ON	OFF		IMPC_DGN			12 min.				

(The above values are approximate, only) BL = Bleach SF = Fabric softener

8.12 59-minute short wash (Quick) programme with flow meter: cold-90°-60°/50°-40°-30° (w/o options)

NO.	PHASE		Function		Drain Pump	Recirculation Pump	Deterg. Disp.	Motor operation			CYCLE				
								RPM	Movem.	Pause	90°	60°/50°	40°	30°	*
1	PREWASH		Calibration	Level	ON	OFF		No movement			Drain				
2			Flow calibration	Level	OFF	OFF	PW	No movement			Water fill				
3			Maintain water softener	Time	OFF	OFF	PW	55	4	12	1 min.				
4			Water fill	Level	OFF	OFF	PW	No movement			COT_FIRST_PW_LEV				
5			Maintain & Top up level	Time	OFF	ON (35/15)	PW	55	4	12	4 min. COT_SEC_PW_LEV				
6			Heating	Temperature	OFF	ON (35/15)	PW	55	4	12	Heating to 30°				20°
7			Maintain	Time	OFF	ON (35/15)	PW	55	4	12	10 min.				
8			Drain	Time	ON	OFF		No movement			Empty + 14 sec.				
9			Spin	Time	ON	OFF		IMP CO			4 min. with OP check				
10	WASH		Calibration	Level	ON	OFF		No movement			Drain				
11			Water fill	Level	OFF	OFF	PW	No movement			SOFT_LEV				
12			Water fill	Level	OFF	OFF	W	No movement			COT_FIRST_QW_LEV				
13			Maintain & Top up level	Time	OFF	ON (35/15)	W	55	8	8	2 min. COT_SEC_NW_LEV				
14			Heating	Temperature	OFF	ON (35/15)		90° 55/8/8 Others : E99_ZP_MOV			60°	60°	40°	30°	20°
15			Heating	Temperature	OFF	OFF		55	8	8	85°				
16			Maintain	Time	OFF	ON (35/15)		55	10	3	2 min.				
17			Maintain heating	Time	OFF	ON (35/15)		E99_ZP_MOV				60° 5 min.	40° 5 min.	30° 5 min.	20° 10 min.
18			Maintain heating	Time	OFF	ON (35/15)		E99_ZP_MOV					40° 10 min.	30° 10 min.	20° 10 min.
19			Cooling	Time	OFF	OFF	W	55	8	8	Qc				
20				Time	OFF	ON (35/15)		55	4	12	2 min.				
21			Drain	Time	ON	OFF		No movement			Empty + 14 sec.				
22	Rinses	1st Rinse	Water fill	Level	OFF	OFF	BL	No movement			COT_FIRST_Q_R_LEV				
23			Maintain & Top up level	Time	OFF	ON (35/15)	BL	No movement			COT_DEF_RIN_LEV 3 min.				
24			Drain	Time	ON	OFF		No movement			Empty + 14 sec.				
25			Spin	Time	ON	OFF		IMP_IN_DGN			5 min.				
26		2nd Rinse	Water fill	Level	OFF	OFF	SF	No movement			COT_LAST_Q_R_LEV				
27			Maintain	Time	OFF	OFF		55	8	8	30 Sec.				
28			Water fill	Time	OFF	OFF	SF	55	8	8	Qfs				
29			Maintain & Top up level	Time	OFF	ON (35/15)	BL	55	8	8	COT_DEF_RIN_LEV 3 min.				
30			Drain	Time	ON	OFF		No movement			Empty + 14 sec.				
31			Spin	Time	ON	OFF		IMP_DGN_SH			9.5 min.				

(The above values are approximate, only) PW = Prewash W = Wash BL = Bleach SF = Fabric softener ▢ Only if cycle begins with a wash phase and not with a prewash

8.13 79-minute short wash programme, with flow meter (Daily): cold-90°-60/50°-40°-30° (w/o options)

NO.	PHASE		Function		Drain Pump	Recirculation Pump	Deterg. Disp.	Motor operation			CYCLE				
								RPM	Movem.	Pause	90°	60°/50°	40°	30°	*
1	PREWASH		Calibration	Level	ON	OFF		No movement			Drain				
2			Flow calibration	Level	OFF	OFF	PW	No movement			Water fill				
3			Maintain water softener	Time	OFF	OFF	PW	55	4	12	1 min.				
4			Water fill	Level	OFF	OFF	PW	No movement			COT_FIRST_PW_LEV				
5			Maintain & Top up level	Time	OFF	ON (35/15)	PW	55	4	12	4 min. COT_SEC_PW_LEV				
6			Heating	Temperature	OFF	ON (35/15)	PW	55	4	12	Heating to 30°				20°
7			Maintain	Time	OFF	ON (35/15)	PW	55	4	12	10 min.				
8			Drain	Time	ON	OFF		No movement			Empty + 14 sec.				
9			Spin	Time	ON	OFF		IMP CO			4 min. with OP check				
10	WASH		Calibration	Level	ON	OFF		No movement			Drain				
11			Water fill	Level	OFF	OFF	PW	No movement			SOFT_LEV				
12			Water fill	Level	OFF	ON (35/15)	W	No movement			COT_DAILY79_FIRST_W_LOAD				
13			Maintain		OFF	ON (35/15)		55	8	8	1 min.				
14			Wait		OFF	OFF		No movement			6 sec.				
15			Maintain & Top up level	Time	OFF	ON (35/15)	W	55	8	8	1 min. COT_DAILY_FIRST_LEVEL or COT_DAILY79_WASH_REF_QNT				
16			Heating	Temperature	OFF	ON (35/15)		90° 55/8/8 Others : E99_ZP_MOV			60°	60°	40°	30°	20°
17			Heating	Temperature	OFF	OFF		55	8	8	85°				
18			Maintain	Time	OFF	ON (35/15)		55	10	3	5 min.				
19			Maintain heating	Time	OFF	ON (35/15)		E99_ZP_MOV				60° 5 min.	40° 15 min.	30° 15 min.	20° 15 min.
20			Maintain	Time	OFF	OFF		E99_ZP_MOV				5 min. G22 13 min. G20	5 min.	5 min.	10 min.
21			Cooling	Time	OFF	OFF	W	55	8	8	Qc				
22				Time	OFF	ON (35/15)		55	4	12	2 min.				
23			Drain	Time	ON	OFF		No movement			Empty + 14 sec.				
24	Rinses	1st Rinse	Water fill	Level	OFF	ON (35/15)	BL	MONO_80_MOV			COT_DAILY79_FIRST_R_LOAD				
25			Maintain & Top up level	Time	OFF	ON (35/15)	BL	55	10	3	COT_REF_N_R_LEV 3 min.				
26			Drain	Time	ON	OFF		No movement			Empty + 14 sec.				
27			Spin	Time	ON	OFF		IMP_IN_DGN			5 min.				
28		2nd Rinse	Water fill	Level	OFF	ON (35/15)	SF	MONO_80_MOV			COT_DAILY79_LAST_R_LOAD				
29			Maintain	Time	OFF	OFF		55	8	8	30 Sec.				
30			Water fill	Time	OFF	ON (35/15)	SF	55	10	3	COT_DAILY79_LAST_R_SEC_LOAD				
31			Maintain & Top up level	Time	OFF	ON (35/15)	BL	55	10	3	COT_REF_N_R_LEV 3 min.				
32			Drain	Time	ON	OFF		No movement			Empty + 14 sec.				
33			Spin	Time	ON	OFF		IMP_DGN_SH			9.5 min.				

(The above values are approximate, only) PW = Prewash W = Wash BL = Bleach SF = Fabric softener ■ Only if cycle begins with a wash phase and not with a prewash

8.14 99-minute Energy saving wash programme, with flow meter : cold-90°-60°- 40° (w/o options)

NO.	PHASE	Function		Drain Pump	Recirculation Pump	Deterg. Disp.	Motor operation			CYCLE		
							RPM	Movem.	Pause	90°	60°	40°
1	PREWASH	Calibration	Level	ON	OFF		No movement			Drain		
2		Flow calibration	Level	OFF	OFF	PW	No movement			Water fill		
3		Maintain water softener	Time	OFF	OFF	PW	55	4	12	1 min.		
4		Water fill	Level	OFF	OFF	PW	No movement			COT_FIRST_PW_LEV		
5		Maintain & Top up level	Time	OFF	ON (35/15)	PW	55	4	12	4 min. COT_SEC_PW_LEV		
6		Heating	Temperature	OFF	ON (35/15)	PW	55	4	12	Heating to 30°		
7		Maintain	Time	OFF	ON (35/15)	PW	55	4	12	10 min.		
8		Drain	Time	ON	OFF		No movement			Empty + 14 sec.		
9		Spin	Time	ON	OFF		IMP CO			4 min. with OP check		
10	WASH	Calibration	Level	ON	OFF		No movement			Drain		
11		Water fill	Level	OFF	OFF	W	No movement			COT_FIRST_W_LEV		
12		Maintain & Top up level	Time	OFF	ON (35/15)	W	40	10	3	2 min.COT_LAST_N_R_LEV Or Q99m		
13		Maintain	Time	OFF	ON (35/15)	W	40	10	3	2 min. COT_99M_REF_LEV		
14		Maintain	Time	OFF	OFF	W	No movement			22 sec.		
15		Heating	Temperature	OFF	OFF	W	90° :55/10/3 60° : E99_ZP_MOV 40° : N_MOV			67°	57°	44°
16		Maintain heating	Time	OFF	90° : ON (35/15) 60° & 40° : OFF	W	90° & 40° :55/10/3 60° : E99_ZP_MOV			67° 5 min.	57° 5 min.	44° 30 min.
17		Wait	Time	OFF	OFF	W	No movement				30 sec.	30 sec.
18		Maintain	Time	OFF	OFF	W	90° :55/10/3 60° : E99_ZP_MOV 40° : N_MOV			67°	57°	44°
19		Maintain	Time	OFF	ON (35/15)	W	90° : 55/10/3 60° : E99_ZP_MOV 40° : N_MOV.			25 min.	10 min.	10 min.
20		Maintain	Time	OFF	ON (35/15)	W	90° : 55/10/3 60° : E99_ZP_MOV 40° : N_MOV.				10 min.	20 min.
21		Maintain	Time	OFF	OFF	W	55	10	3	5 min.		
22		Maintain	Time	OFF	ON (35/15)	W	90° : 55/10/3 60° : E99_ZP_MOV 40° : 55/8/8.				3 min.	5 min.
23		Cooling	Time	OFF	OFF	W	55	8	8	Qc		Only if > 67°C
			Time	OFF	ON (35/15)		55	4	12	2 min.		
24		Drain	Time	ON	OFF		No movement			Empty + 14 sec.		

(The above values are approximate, only) PW = Prewash W = Wash AS = Anti-foam control

8.15 Rinses in 99-min. Energy saving wash programme w/flow meter: cold-90°-60°-40° (w/o options)

NO.	Phase	Description		Drain Pump	Recirculation Pump	Deterg. Disp.	Motor operation			CYCLE		
							RPM	Movem.	Pause	90°	60°	40°
25	1st Rinse	Water fill	Level	OFF	OFF	SF	No movement			COT_FIRST_AND_R_LEV		
26		Maintain & Top up level	Time	OFF	ON (35/15)	W	55	10	3	COT_REF_AND_R_LEV 5 min.		
27		Drain	Time	ON	OFF		No movement			Empty + 14 sec.		
28		Spin	Time	ON	OFF		IMP_IN_DGN			5 min.		
29	2nd Rinse	Water fill	Level	OFF	OFF	SF	No movement			COT_LAST_AND_R_LEV		
30		Maintain	Time	OFF	OFF		55	8	8	30 sec.		
31		Water fill	Level	OFF	OFF	SF	55	8	8	Qfs		
32		Maintain & Top up level	Time	OFF	ON (35/15)		55	10	3	COT_REF_AND_R_LEV 7 min.		
33		Drain	Time	ON	OFF		No movement			Empty + 14 sec.		
34		Spin	Time	ON	OFF		IMPC_DGN			12 min.		

(The above values are approximate, only) W = Wash SF = Fabric softener

8.16 Automatik wash programme with flow meter : 40° (w/o options)

NO.	PHASE		Function		Drain Pump	Recirculation Pump	Deterg. Disp.	Motor operation			CYCLE
								RPM	Movem.	Pause	40°
1	PREWASH		Maintain water softener	Time	OFF	OFF	PW	55	4	12	1 min.
3			Water fill	Level	OFF	OFF	PW	No movement			COT_FIRST_PW_LEV
4			Maintain & Top up level	Time	OFF	ON (35/15)	PW	55	4	12	4 min. COT_SEC_PW_LEV
5			Heating	Temperature	OFF	ON (35/15)	PW	55	4	12	30°
6			Maintain	Time	OFF	ON (35/15)	PW	55	4	12	10 min.
7			Drain	Time	ON	OFF		No movement			Empty + 14 sec.
9			Spin	Time	ON	OFF		IMP C0			4 min. with OP check
10	WASH		Calibration	Level	ON	OFF					Drain
11			Water fill	Level	OFF	OFF	PW	55	8	8	COT_UNI_FLEVEL
13			Water fill	Level	OFF	OFF	W	No movement			50 dl
15			Maintain & top-up	Time	OFF	ON (35/15)	W	COLD_MOV			COT_UNI_REF_LEV 4 min.
16			Maintain & top-up	Time	OFF	ON (35/15)	W	55	8	8	COT_UNI_REF_LEV 4 min.
17			Heating	Temperature	OFF	ON (35/15)	W	55	8	8	42°
18			Maintain Heating	Time	OFF	ON (35/15)	W	55	10	3	42° ref 10 min
19			Maintain Heating	Time	OFF	OFF	W	55	10	3	42° ref 10 min
20			Maintain	Time	OFF	ON (35/15)	W	55	10	3	20 min.
21			Drain		ON	OFF		No movement			Empty + 14 sec.
22			Spin		ON	OFF		IMP_10			3.5 min.
23			Drain		ON	OFF		No movement			20 sec.
24	Rinses	1st Rinse	Water fill	Level	OFF	OFF	BL	No movement			SYN_FIRST_R_LEV
25			Maintain & Top up level	Time	OFF	ON (35/15)	BL	55	10	3	COT_REF_N_R_LEV 5 min.
26			Drain	Time	ON	OFF		No movement			Empty + 14 sec.
27			Spin	Time	ON	OFF		IMP_9			3.5 min.
28		2nd Rinse	Water fill	Level	OFF	OFF	BL	No movement			SYN_INT_R_LEV
29			Maintain & Top up level	Time	OFF	ON (35/15)	BL	55	8	8	COT_REF_N_R_LEV 5 min.
30			Drain	Time	ON	OFF		No movement			Empty + 14 sec.
31			Spin	Time	ON	OFF		IMP_9			3.5 min.
32		Final rinse (fabric softener	Water fill	Level	OFF	OFF	SF	No movement			SYN_LAST_R_LEV
33			Maintain	Time	OFF	OFF		55	8	8	30 sec.
34			Water fill	Level	OFF	OFF	SF	55	8	8	Qfs
35			Maintain & Top up level	Time	OFF	ON (35/15)	BL	55	10	3	COT_REF_N_R_LEV 8 min.
36			Drain	Time	ON	OFF		No movement			Empty + 14 sec.
37			Spin	Time	ON	OFF		IMP_NORM_UNI(IMPC_DGN)			12 min.

(The above values are approximate, only) PW = Prewash W = Wash BL = Bleach SF = Fabric softener

9 Drying programmes

9.1 Drying programme - cotton

DRYING – COTTON (full power)													
N.°	PHASE	Function		Drain pump	Fan	LEV	Compart.	Motor			Temperature	Time	Notes
								Rpm	Movement	Pause			
1	DRYING	Drain	Level	ON	OFF			No movement					
2		Control water fill	Level	OFF	OFF	(10.0)	COND	55	8	8			
3		Unrolling	Time	ON	OFF			55	8	8		10 min.	Only when autodrying is enabled
4		Cooling	Temp.	ON	ON		COND	55	8	8	35°	20 min.	Not for time-controlled drying
5		Calculation of drying time	Time	ON	ON		COND	55	8	8	COT_DRY_TEMP		
6		Timer-controlled drying	Time	OFF	ON			55	57	3	COT_DRY_TEMP	10 min.	Only when drying time >20 min.
7		Timer-controlled drying	Time	ON	ON		COND	55	57	3	COT_DRY_TEMP	Max. 130 min	
8		Cooling	Time	ON	ON		COND	55	57	3	35°	10 min.	

9.2 Drying programme – synthetic fabrics

DRYING – SYNTHETIC FABRICS (half power)													
N.°	PHASE	Function		Drain pump	Fan	LEV	Compart.	Motor			Temperature	Time	Notes
								Rpm	Movement	Pause			
1	DRYING	Drain	Level	ON	OFF			No movement					
2		Control water fill	Level	OFF	OFF	(10.0)	COND	55	8	8			
3		Unrolling	Time	ON	OFF			55	8	8		10 min.	Only when autodrying is enabled
4		Cooling	Temp.	ON	ON		COND	55	8	8	35°	20 min.	Not for time-controlled drying
5		Calculation of drying time	Time	ON	ON		COND	55	8	8	SYN_DRY_TEMP		
6		Timer-controlled drying	Time	OFF	ON			55	57	3	SYN_DRY_TEMP	10 min.	Only when drying time >20 min.
7		Timer-controlled drying	Time	ON	ON		COND	55	57	3	SYN_DRY_TEMP	Max. 130 min	
8		Cooling	Time	ON	ON		COND	55	57	3	35°	10 min.	

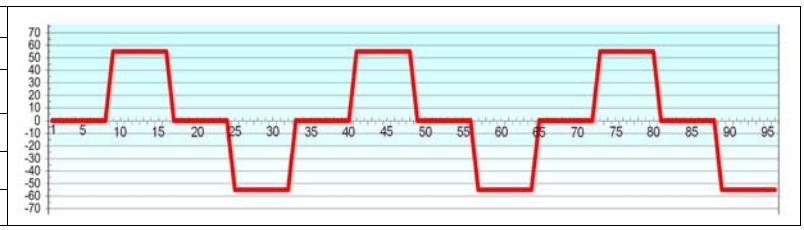
9.3 Drum movements at low speed and during spin

9.3.1 Delicate movement D55

D55	
sec	**rpm**
12	0
4	55
12	0
4	-55

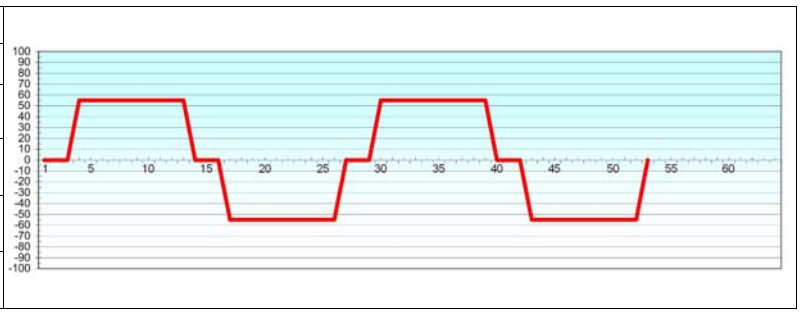
9.3.2 Normal movement N55

N 55	
sec	**rpm**
8	0
8	55
8	0
8	-55



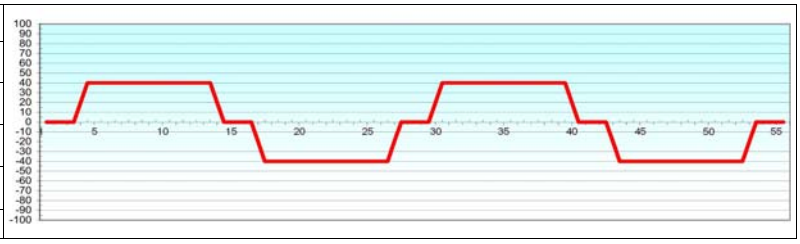
9.3.3 Vigorous movement E55

E 55	
sec	**rpm**
3	0
10	55
3	0
10	-55



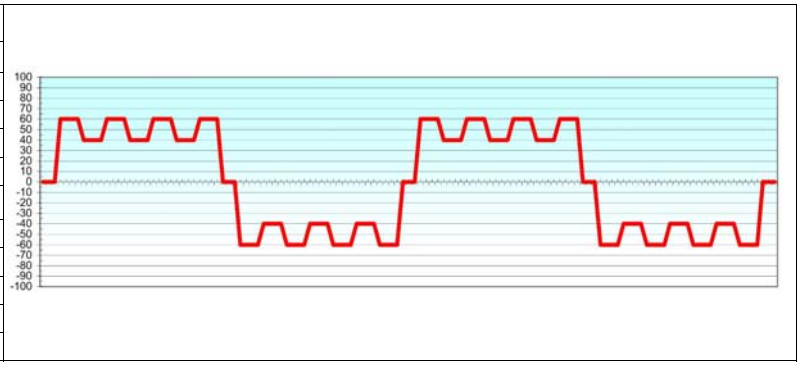
9.3.4 Vigorous movement E40

E 40	
sec	**rpm**
3	0
10	40
3	0
10	-40



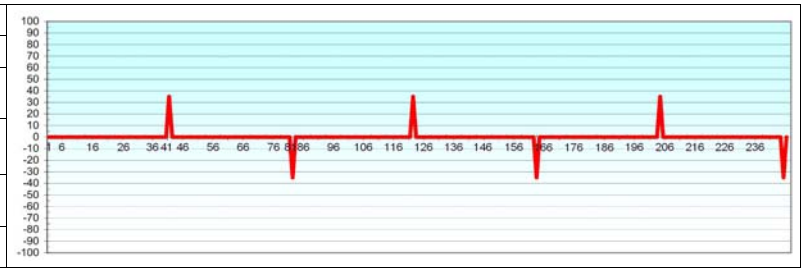
9.3.5 Vigorous movement E99

E 99_ZP_MOV	
sec	**rpm**
2	0
4	60
4	40
4	60
4	40
4	60
4	40
4	60
4	40
3	0



9.3.6 Delicate movement PWL_1 (wool)

PWL_1	
sec	**rpm**
40	0
1	35
40	0
1	-35

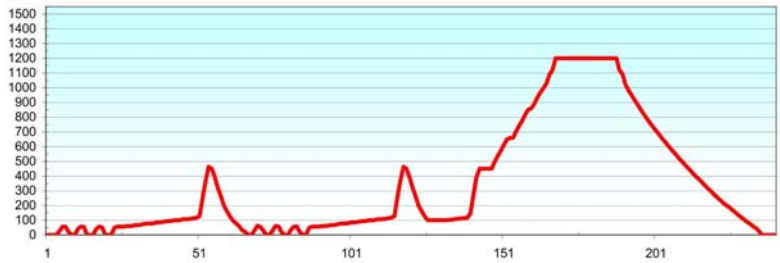


9.3.7 Delicate movement PWL_4 (hand wash)

PWL_4	
sec	**rpm**
57	0
1	35
57	0
1	-35

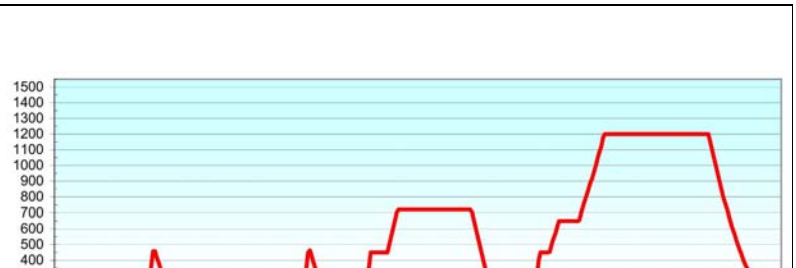
9.3.8 Final spin – hand wash and wool cycle

IMP_4_MOV		AF
rpm	**sec.**	
-----	0	no
FUCS	x	no
FUCS imp.	x	no
FUCS	x	no
FUCS imp.	x	no
100	5	
450	5	AF
650	1	AF
850	1	AF
1200	20	no



9.3.9 Final spin – synthetic fabrics

IMP_5		AF
rpm	**sec.**	
FUCS	x	no
FUCS imp.	x	no
FUCS	x	no
FUCS imp.	x	no
100	15	no
450	10	AF
720	40	AF
200	2	no
100	20	no
450	5	no
650	10	no
1200	55	no

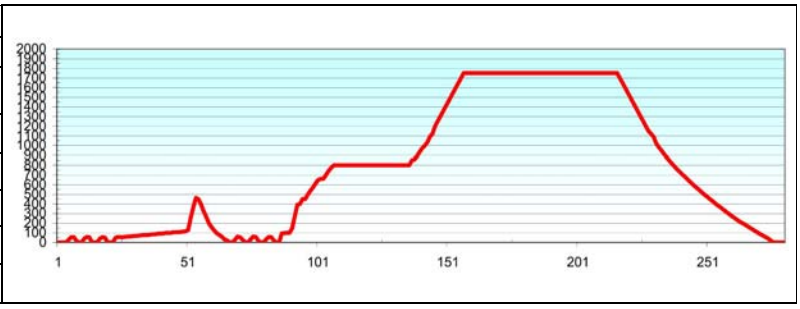


9.3.10 Final spin: delicate fabrics – mini - silk

IMP_7		AF
rpm	sec.	
FUCS	x	no
FUCS imp.	x	no
FUCS	x	no
450	35	AF
700	5	AF
1200	20	AF

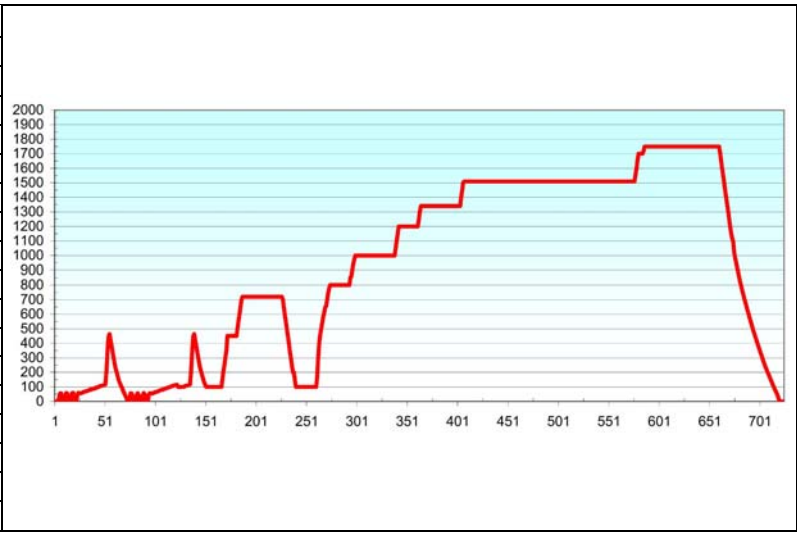
9.3.11 Final spin: cotton washing - intermediate spin during rinses

IMP_IN_DGN		AF
rpm	sec.	
FUCS	x	no
FUCS imp.	x	no
FUCS	x	no
450	2	no
800	30	no
1750	60	no



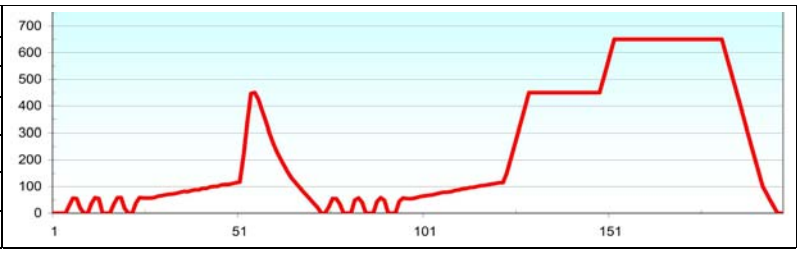
9.3.12 Final spin: cotton/linen

IMPC_DGN		AF
rpm	sec.	
FUCS	x	no
FUCS imp.	x	no
FUCS	x	no
FUCS imp.	x	no
100	15	no
450	10	AF
720	40	AF
200	2	no
100	20	no
800	20	AF
1000	40	no
1200	20	no
1340	40	no
1510	170	no
1700	5	no
1750	75	no



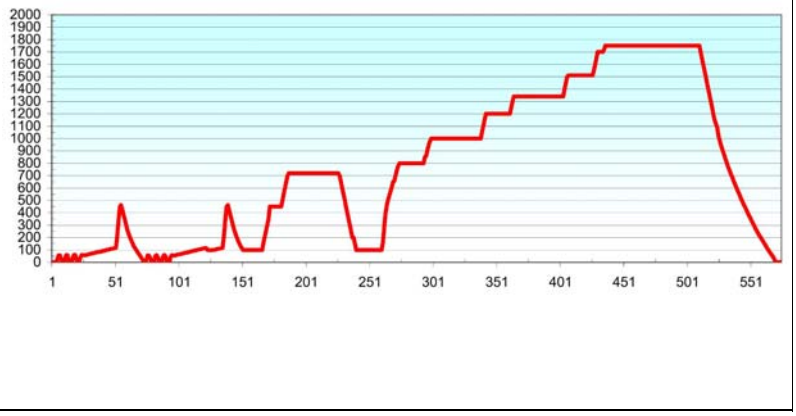
9.3.13 IMP_10

IMP_10		AF
rpm	sec	
FUCS	x	no
FUCS imp	x	no
FUCS	x	no
450	20	no
650	30	no



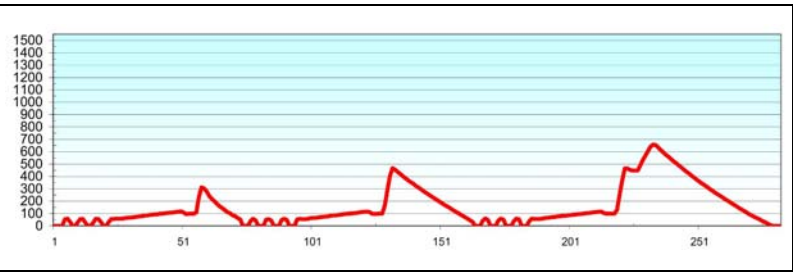
9.3.14 Final spin: cotton/linen, short programme

IMP_DGN_SH		AF
rpm	sec.	
FUCS	x	no
FUCS imp.	x	no
FUCS	x	no
FUCS imp.	x	no
100	15	no
450	10	AF
720	40	AF
200	2	no
100	20	no
800	20	AF
1000	40	no
1200	20	no
1340	40	no
1510	170	no
1700	5	no
1750	75	no



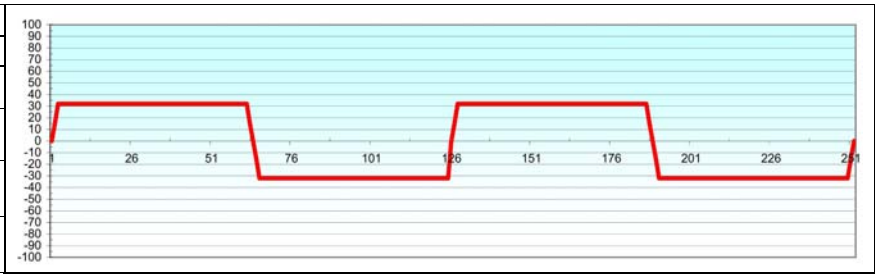
9.3.15 Spin pre-wash cotton/linen, synthetics, intermediate synthetics

IMP_C0		AF
rpm	sec.	
FUCS	x	no
300	1	no
FUCS	x	no
450	1	no
FUCS	x	no
450	5	no
650	1	no



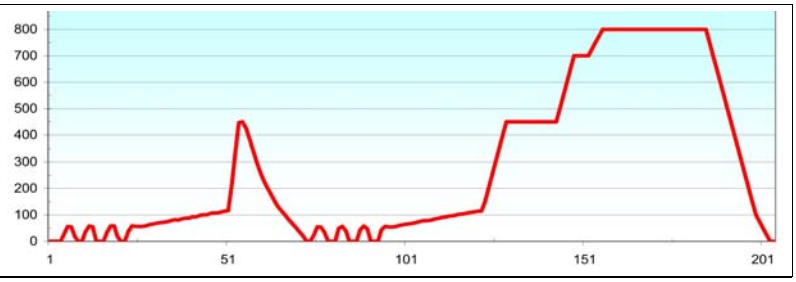
9.3.16 MONO 32 MOV

MONO_32_MOV	
sec	rpm
1	0
60	32
1	0
60	-32



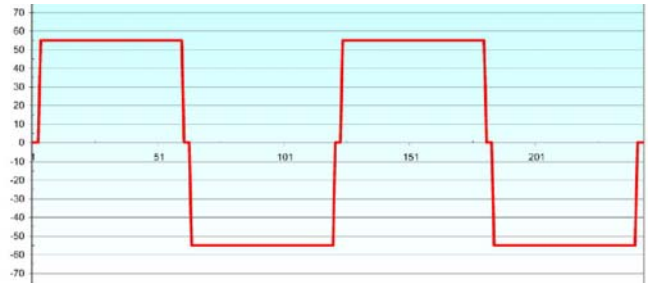
9.3.17 IMP_9

IMP_9		AF
rpm	sec	
FUCS	x	no
FUCS imp	x	no
FUCS	x	no
450	15	no
700	5	no
800	30	no



9.3.18 Movement during drying phase

DRY_MOV		AF
rpm	sec.	
3	0	
55	57	
3	0	
-55	57	



9.4 Control of water level in the drum

Water filling is performed in three ways:

- **fill to level**: the level is controlled by an electronic pressure switch
- **timed fill**: the time needed for filling the required quantity of water is calculated by the circuit board
- **fill to level and to time (combined)**
- **fill to quantity (flow meter)**

Water levels are programmed into each model and depend on the type of drum used.

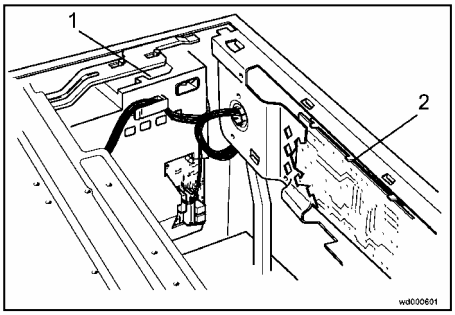
Water levels

Type	Description of load	G 20		G 22	
	Levels for COTTON/LINEN cycle	**F(*)**	**E(*)**	**F(*)**	**E(*)**
COT_FIRST_PW_LEV	Water fill to first level in prewash	100	65	100	65
COT_SEC_EW_LEV	Water fill to second level in wash phase for ENERGY SAVING cycle	65	45	60	40
COT_SEC_NW_LEV	Water fill to second level in wash phase for NORMAL cycle	80	50	70	55
COT_FIRST_N_R_LEV	Water fill in first rinse for NORMAL cycle	100	20	105	20
COT_INT_N_R_LEV	Water fill in intermediate rinses for NORMAL cycle	105	20	100	20
COT_REF_N_R_LEV	Water fill for level top-up in Normal cycle	60	20	65	20
COT_LAST_N_R_LEV	Water fill in final rinse for NORMAL cycle	120	20	140	30
SOFT_LEV	Water fill	40	15	40	15
	Levels for SYNTHETICS cycle				
SYN_FIRST_W_LEV	Water fill to first level in SYNTHETICS cycle	90	20	90	20
SYN_FIRST_R_LEV	Water fill to first level in first rinse	135	20	145	20
SYN_INT_R_LEV	Water fill to first level in intermediate rinses	135	20	145	20
SYN_LAST_R_LEV	Water fill to first level in final rinse	100	20	100	20
SYN_REF_R_LEV	Water level top-up during rinses	60	20	60	20
	Levels for DELICATE FABRICS cycle				
DEL_FIRST_W_LEV	Water fill to first level in DELICATE FABRICS cycle	155	120	130	70
DEL_SEC_W_LEV	Water fill to second level in DELICATE FABRICS cycle	150	100	120	70
DEL_FIRST_R_LEV	Water fill to first level in first rinse	170	120	160	120
DEL_INT_R_LEV	Water fill to first level in intermediate rinses	170	120	160	120
DEL_LAST_R_LEV	Water fill to first level in final rinse	145	120	130	120
DEL_REF_R_LEV	Water level top-up during rinses	150	120	150	100
	Levels for HAND WASH cycle				
HAND_FIRST_W_LEV	Water fill to first level in HAND WASH cycle	140	100	125	100
HAND_SEC_W_LEV	Water fill to second level in HAND WASH cycle	130	100	120	100
HAND_INT_R_LEV	Water fill to first level in intermediate rinses	180	100	160	100
HAND_LAST_R_LEV	Water fill to first level in final rinse	150	100	130	100
HAND_REF_R_LEV	Water level top-up during rinses	130	100	120	100
	Levels for WOOL cycle				
WOOL_FIRST_W_LEV	Water fill to first level	140	90	120	90
WOOL_SEC_W_LEV	Water fill to second level	130	90	115	90
WOOL_INT_R_LEV	Water fill to first level in intermediate rinses	180	100	150	100
WOOL_LAST_R_LEV	Water fill to first level in final rinse	150	100	115	100
WOOL_REF_R_LEV	Water level top-up during rinses	120	90	120	100

(*) Dimensions are expressed in mm (The above values are approximate, only)

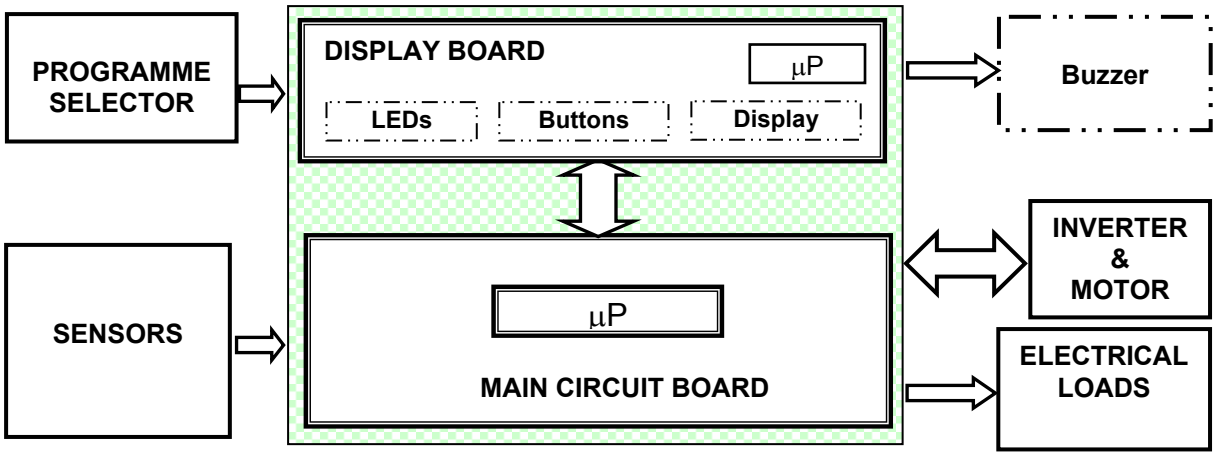
10 TECHNICAL CHARACTERISTICS

10.1 EWM3000NEW Electronic control system



The EWM3000NEW electronic control system consists of a main board (1), a control / display board (2) and an inverter board which controls motor speed.

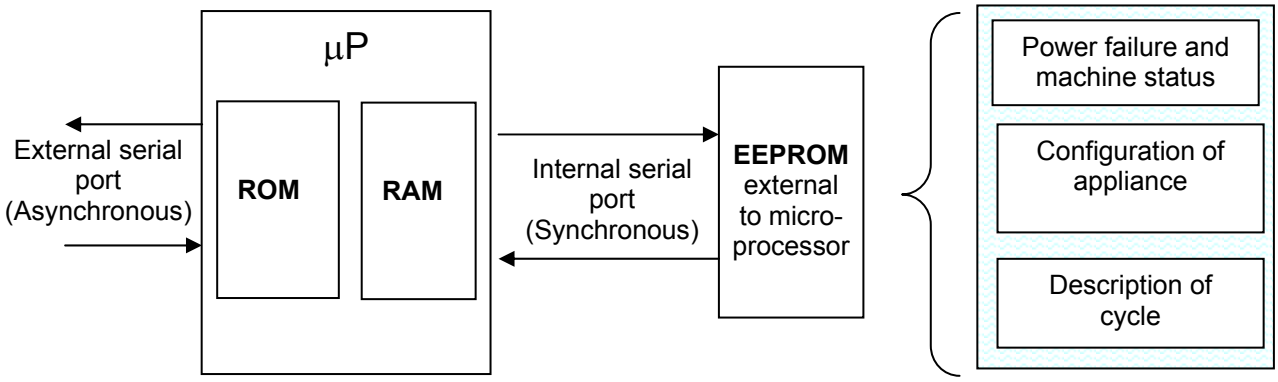
10.1.1 Functions provided by the electronic board



The electronic board:

- ⇨ Receives cycle settings from the control/display board. The buttons, LEDs and display are located on this board, which is connected to the programme selector.
- ⇨ Powers all the electrical components (solenoids, drain pump, heating element, door lock unit).
- ⇨ Controls the temperature of the wash water using a signal from an NTC sensor, and controls the speed of the motor through the inverter board (using a signal from a tachometric generator).
- ⇨ Controls the water level in the drum by monitoring the level pressure switch and safety pressure switch.
- ⇨ Controls the water level in the drum by monitoring the flow meter.
- ⇨ Checks the turbidity of the rinse water by monitoring the turbidity sensor.

10.1.2 Memories contained in the electronic control system



The main board is equipped with an EEPROM that is external to the microprocessor. It is used to store data on machine configuration, description of the cycle, and status of the cycle in case of a power failure or alarm.
The configuration data are programmed at the factory by a computer with a DAAS interface. This data determines the operation of the appliance (number and types of programmes, options, LEDs, etc.).

The memory for the microprocessor on the main board is divided into three parts:

ROM This area of memory contains the general instructions that control the functions of the appliance, such as managing electronic components and alarms. It is written by the manufacturer of the microprocessor and cannot be changed.

RAM This memory contains all the variables used to execute the wash programme, which are written in a dynamic manner. It can be read using a DAAS interface.

EEPROM This area of memory contains:

⇒ The data required for restarting the appliance after a power failure.

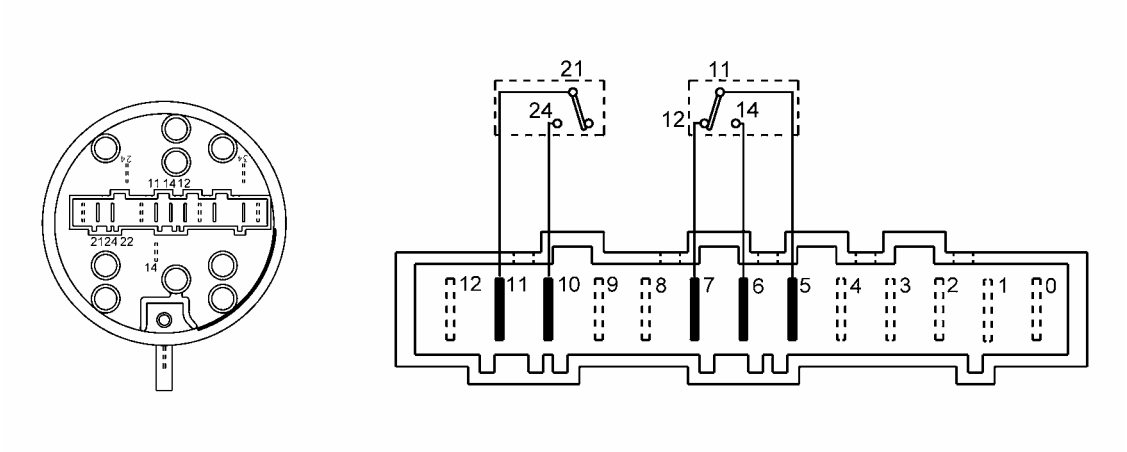
⇒ Wash cycle parameters such as fill level, speed and type of motor movement, and temperatures during the various wash phases. Once they are written, these parameters are protected and can normally be read only with a DAAS interface. The parameters can be modified using a special command that unprotects them.

⇒ Configuration parameters such as final spin speed, drum volume, type of wash, etc. These parameters can be programmed using a DAAS interface.

10.2 Pressure switch

A two-level pressure switch is used as a safety device with the following functions:

- contact **11-14**: anti-boiling safety level
- contact **21-24**: anti-boiling safety level

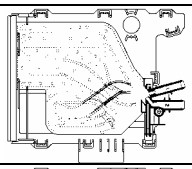
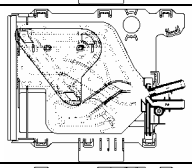
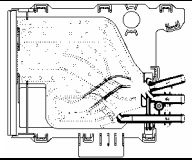


10.2.1 Calibration of the levels on the pressure switch

	Full (mm)	Reset (mm)
Anti-boiling level	50± 3	30± 3
Anti-boiling level	50± 3	30± 3

10.3 Detergent dispenser

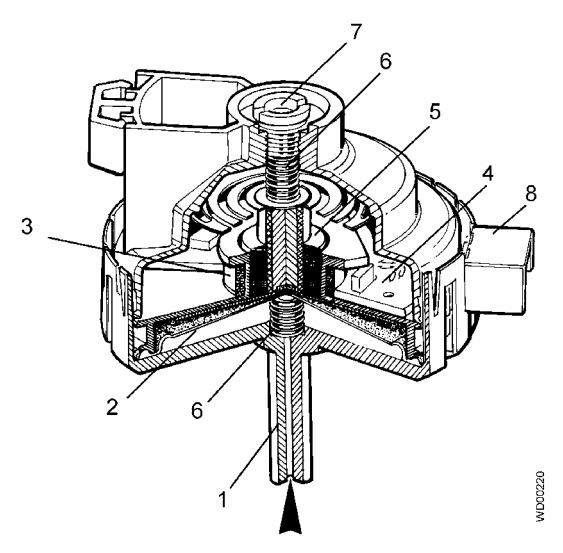
The EWM 3000 electronic control system can control a number of types of detergent dispensers:

Type	Detergent dispenser		No. of solenoid valves
3 compartments		Prewash/Stain remover – Detergent – Fabric softener *(either prewash or stain remover can be dispensed)*	2
4 compartments		Prewash/Stain remover – Detergent – Bleach - Fabric softener *(the prewash/stain remover section and the fabric softener section are connected by a "junction")*	2
		Prewash/Stain remover – Detergent – Bleach - Fabric softener *(either prewash or stain remover can be dispensed)*	3

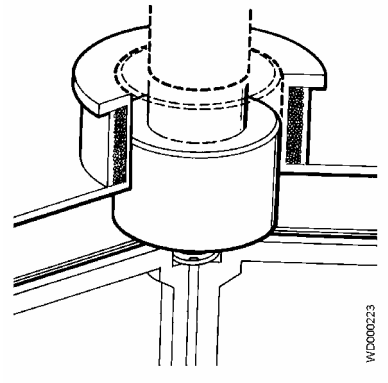
10.4 Analogue pressure switch (electronic)

The electronic pressure switch is an analogue device that controls the water level in the drum. It is directly connected to the main board.

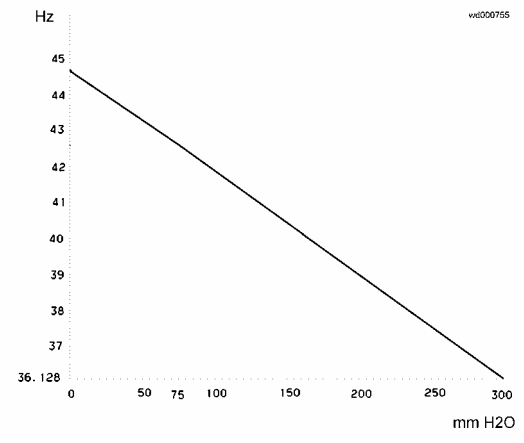
1. air intake tube
2. diaphragm
3. coil
4. electronic circuit (oscillator)
5. core
6. spring
7. calibration screw
8. connector



A tube connects the pressure switch to an internal pressure takeoff.
When water is loaded into the drum, pressure is created in the water circuit, which moves the diaphragm. When the diaphragm moves, the position of the core inside the coil changes, which varies the inductance and, as a result, changes the frequency of the oscillator. The main board measures this frequency and determines the amount of water that has been loaded into the drum.

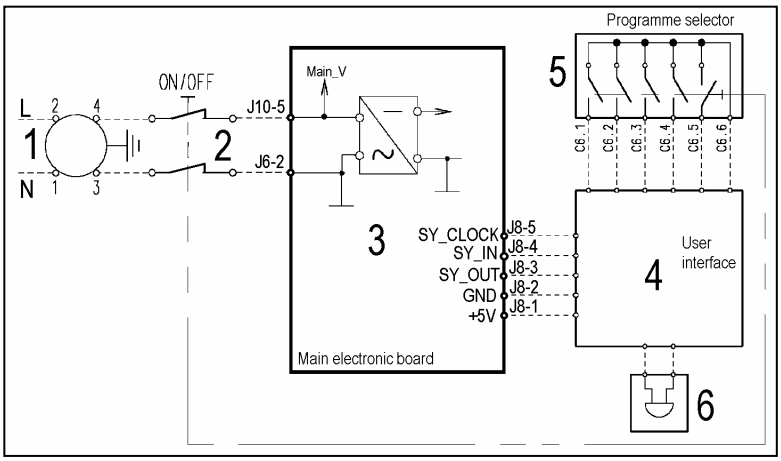


Change in frequency as a function of pressure



10.5 Power supply and selection of programmes

The main board (3) is powered through the interference filter (1) when the contacts on the main switch (2) close. The connectors involved are J6-2 (neutral) and J10-5 (line).
The main board supplies the 5V required by the control/display board (4) so that programmes can be selected using the selector (5). Selection of options and START is made using the buttons on the board (4).
If a buzzer is present (6), it is powered by the display board.



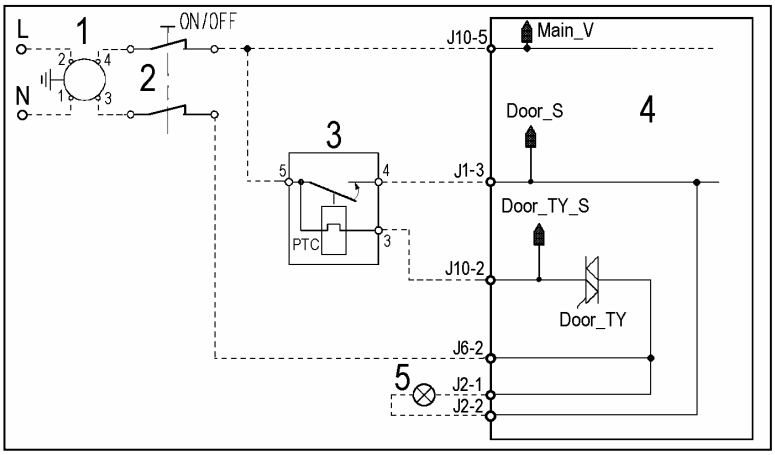
10.6 Safety lock system on door

The appliance may be equipped with any of the following types of systems:

- Voltmetric with PTC: when the cycle ends, the user must wait 1 – 3 minutes before opening the door
- Instantaneous: the door can be opened immediately when the cycle ends
- Instantaneous with microswitch (that switches on a lamp or displays the weight of the laundry)

10.6.1 Voltmetric device with PTC

1. *Interference filter*
2. *Main switch (key or programme selector)*
3. *Safety lock on door*
4. *Main board*
5. *"Door locked" indicator light*



- **Operating principle**

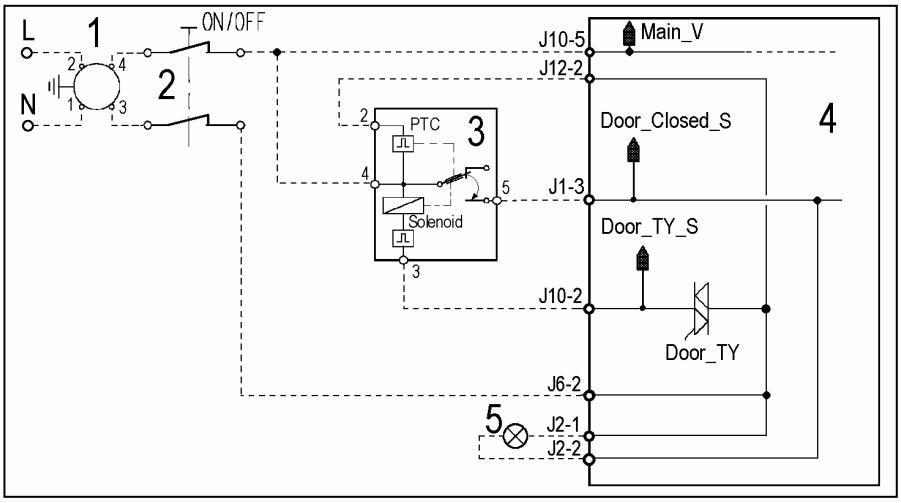
- When the programme is started by pressing the Start/Pause button, the triac on the main board (connector J10-2) supplies power to the bimetallic PTC switch (contacts 3-5). After 2-4 seconds, the switch closes (5-4) that feeds power to the electronic components on the machine (but only if the door is closed).
- This device keeps the door from opening while the machine is operating.
- When the wash programme ends, the main board removes power from the device, but the door stays locked for 1- 2 minutes (the time required by the PTC to cool down).

- **"Door locked" indicator light**

- Some models are equipped with an indicator light which indicates that the door is locked. The light switches off when the door can be opened.

10.6.2 Instantaneous safety system

1. *Interference filter*
2. *Main switch (key or programme selector)*
3. *Safety lock on door*
4. *Main board*
5. *"Door locked" indicator light*



- **Operating principle**
  - When the ON/OFF switch closes and the appliance is switched on, power is applied to the bimetallic PTC switch (contact 4-2), but the door remains unlocked.
  - When the programme starts (Start/Pause button), the main board sends a 20 msec pulse to contacts 4-3 on the solenoid (connector J10-2 on the board) (at least 6 seconds must have passed since the appliance was switched on). This locks the door and simultaneously closes the main switch (contacts 4-5), thus applying power to all components on the appliance.
  - When the programme ends, the main board sends two additional 20 msec pulses (200 msec apart):
    - the first pulse does not unlock the door
    - the second pulse (which is sent only if the appliance is operating properly) unlocks the door lock device and simultaneously opens the contacts on the main switch.

- **Conditions required for opening the door**
  - Before pulses are sent to open the door, the main board checks for the following conditions:
    - The drum must not be moving (no signal from the tachometric generator).
    - The water level must not be higher than the bottom of the door.
    - The water temperature must not exceed 50º C.

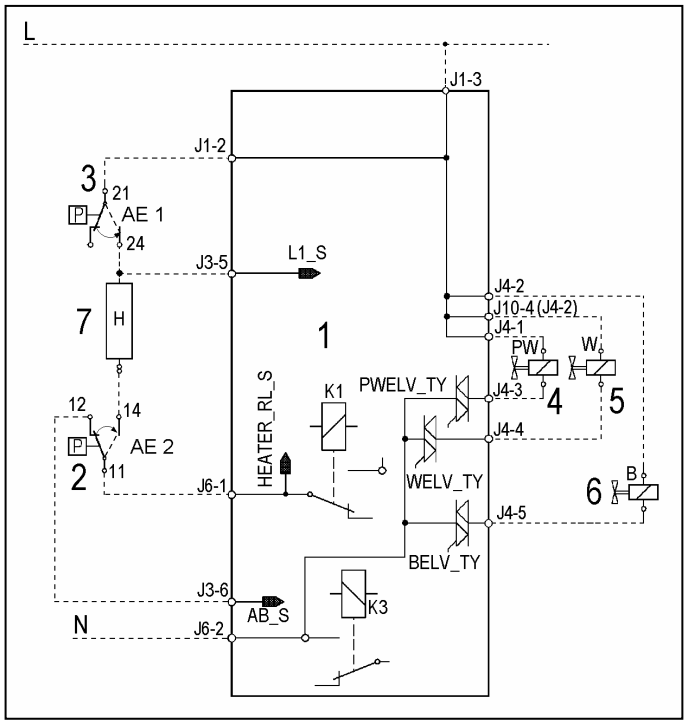
- **Automatic unlock**
  - If a power failure occurs, if the appliance is shut off, or if the solenoid malfunctions, the bimetallic PTC will cool down and the door will unlock in 1 - 4 minutes.

- **"Door locked" indicator light**
  - Some models are equipped with an indicator light which indicates that the door is locked. The light switches off when the door can be opened.

10.7 Water fill system

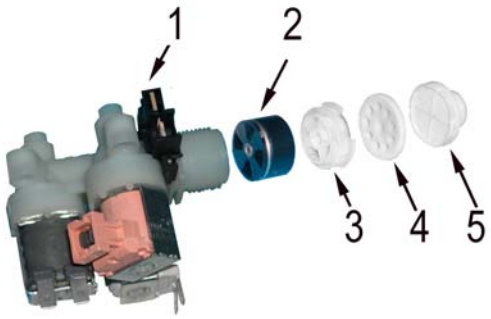
The solenoid valves are powered by the main board through two or three triacs. The state of the pressure switch (full-empty) is detected over two sensing lines.

1. *Main board*
2. *Anti-boiling level switch*
3. *Anti-boiling level switch*
4. *Solenoid valve for prewash*
5. *Solenoid valve for wash*
6. *Solenoid valve for bleach (on some models)*
7. *Heating element*



10.7.1 Flow meter

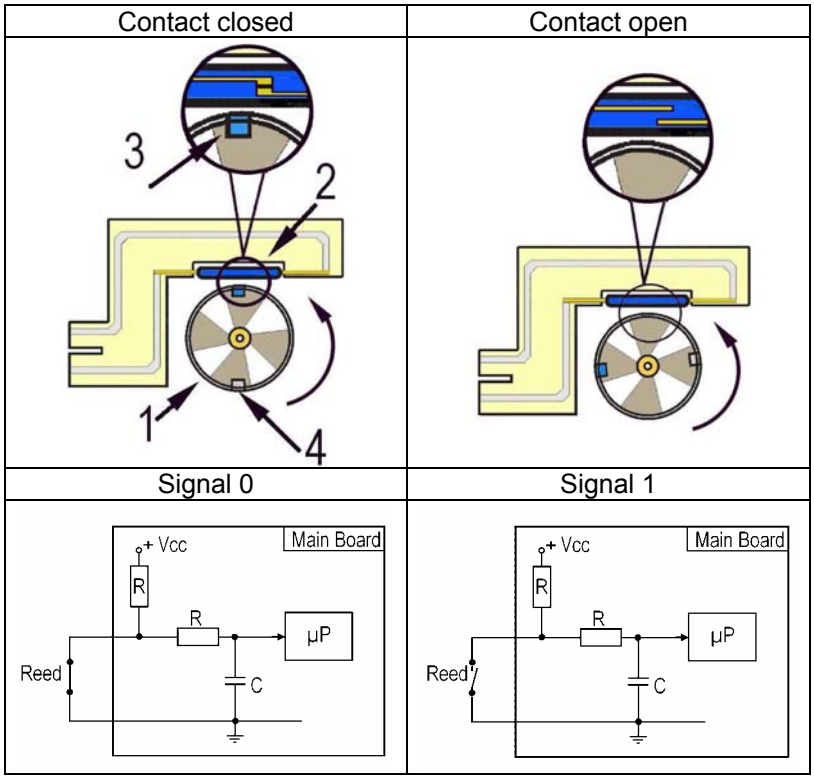
Some models of solenoid valves have a built-in flow sensor which measures the quantity of water in litres that is loaded into the appliance.
If the sensor malfunctions, the water level is controlled by the analogue pressure switch.

Solenoid valve – exploded view	Main board	Turbine
		
1-Circuit board 2-Turbine 3-Deflector 4-Diffuser 5-Double filter	6- Reed switch	7-Magnet

10.7.2 Operating principle of flow meter

The main components of the flow sensor are:

1. *Turbine (with magnet and counterweight mounted on the outside)*
2. *Reed switch (normally open)*
3. *Magnet*
4. *Counterweight*



Water entering the solenoid valve rotates the turbine (1) and magnet (3), which passes in front of the reed switch (2), thus closing it. As this contact opens and closes, it generates pulses at a frequency that is a function of water flow.
The turbine completes 230 revolutions for each litre of water. The operating range of the flow sensor is 0.2-10 bar.
Using the signal it receives, the microprocessor can calculate the number of litres of water passing through the solenoid valve.

Mechanical jamming of solenoid valve

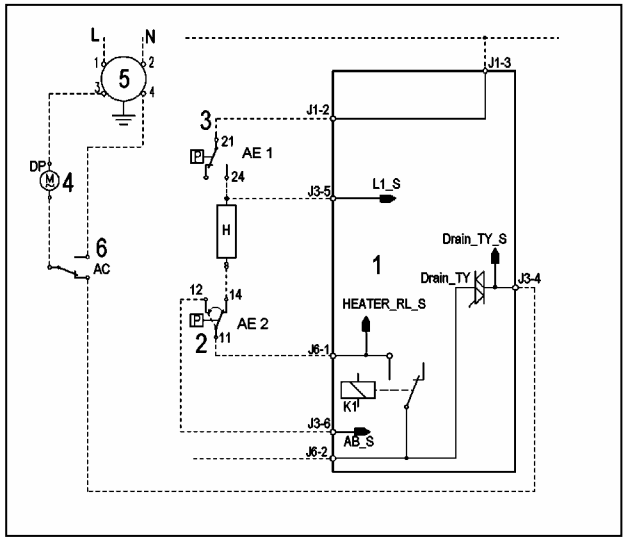
The solenoid valve may jam open without being actuated (which will cause flooding if the pressure switch controlling the water level does not trip). If this occurs, the electronic control system (which continuously monitors the flow sensor) will lock the door, start the drain pump and display an alarm.

Low water pressure

If the flow sensor does not generate a signal during water fill even though power is being applied to the solenoid valve, the cause of this condition may be a closed water tap or clogged filter on the solenoid valve (with consequent low water pressure). If this occurs, a warning will be displayed and the cycle will continue for five minutes, after which time an alarm will be signaled.

The solenoid valve controlling residual condensed water operates during the drying phase on washer-dryers. The alarm is deactivated because the amount of water fill is very small.

10.8 Drain pump



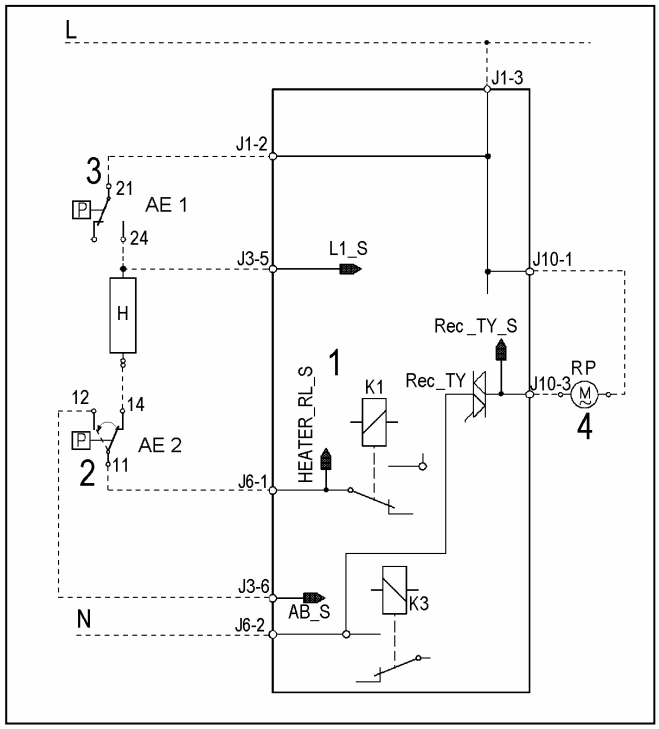
1. *Main board*
2. *Anti-boiling pressure switch AE2*
3. *Anti-boiling pressure switch AE1*
4. *Drain pump*
5. *Interference filter*
6. *Aqua Control*

The main board powers the drain pump through a triac in the following way:

- For a programmed time
- Until the anti-boiling pressure switch closes in the empty position, after which time the pump operates briefly or the programme moves to the next phase.

10.9 Recirculation pump

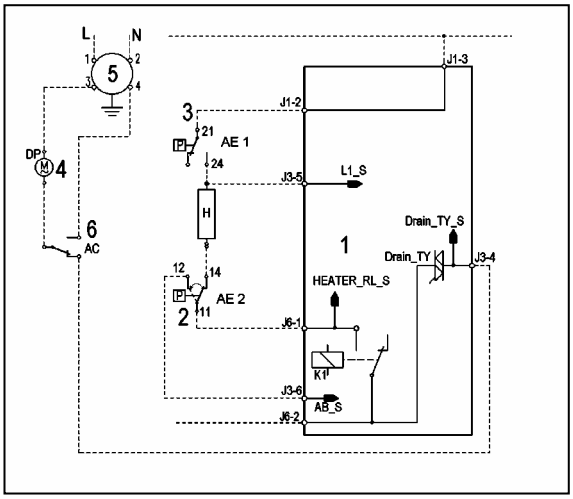
On jetsystem models, the main board powers the recirculation pump through a triac.



1. *Main board*
2. *Anti-boiling pressure switch AE 2*
3. *Anti-boiling pressure switch AE 1*
4. *Recirculation pump*

10.10 Aqua Control

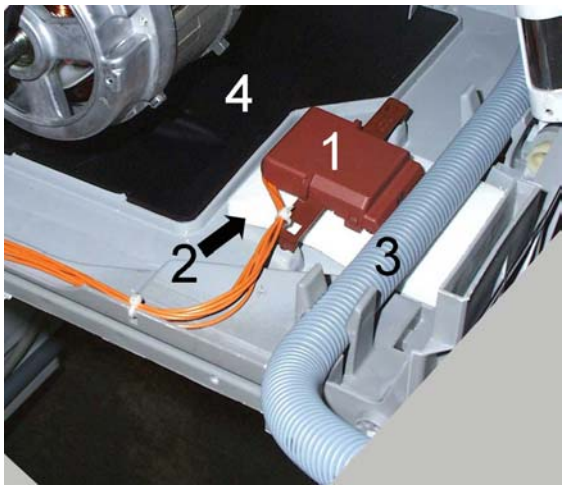
The Aqua Control system is a sensor located in contact with the base frame. The sensor detects water leaks inside the machine (not only during normal operation, but also when the unit is off and plugged in) and starts the drain pump if a leak occurs.



1. *Main board*
2. *Anti-boiling pressure switch AE2*
3. *Anti-boiling pressure switch AE1*
4. *Drain pump*
5. *Interference filter*
6. *Aqua Control*

Besides supporting the various components on the appliance (drain pump, recirculation pump, shock absorbers, etc.), the base frame is designed to be a container that collects any water leaks that may occur (from the drum, from a tube or pipe, etc.). These leaks are directed into an area where a float is installed. When this float is raised by water, it actuates a microswitch that starts the drain pump. When the switch is tripped, an alarm is also signaled (if the machine is switched on).

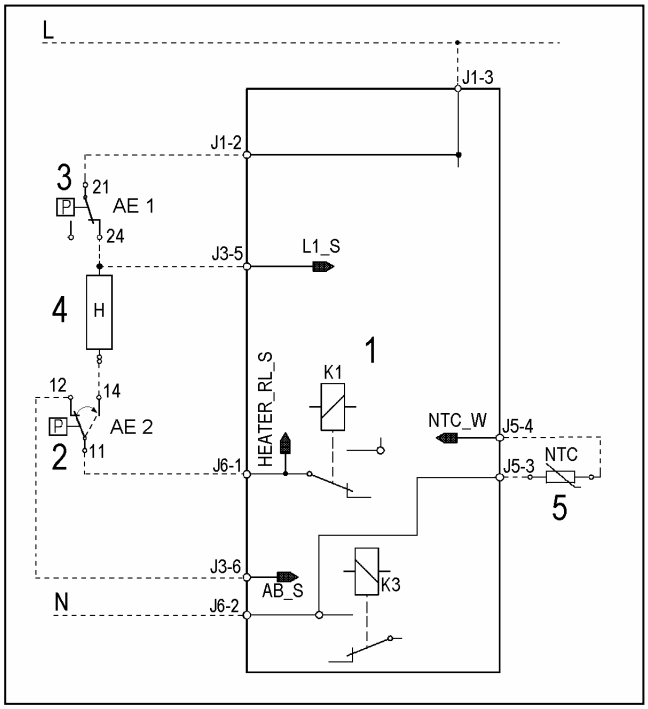
Important: When replacing the drain pump or tube, arrange the tube so that it doesn't interfere with the float.



1. *microswitch actuated by float*
2. *float*
3. *drain tube*
4. *cover*

10.11 Heating system

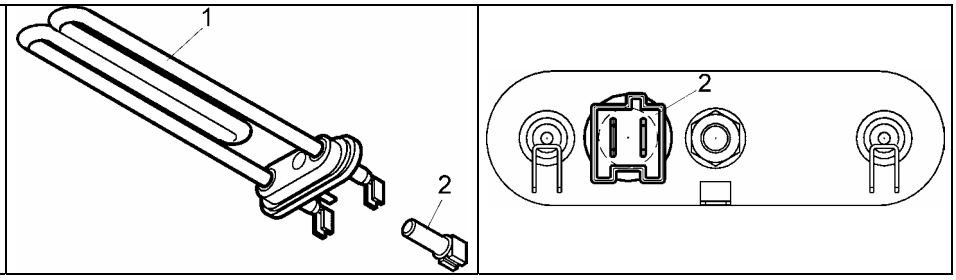
1. *Main board*
2. *Anti-boiling pressure switch AE2*
3. *Anti-boiling pressure switch AE1*
4. *Heating element*
5. *NTC temperature sensor*



The heating element is powered by a relay on the main board through the contacts on the pressure switches, which must be closed on “full”.

10.11.1 Heating element

1. *Heating element (1950W)*
2. *NTC sensor*



10.11.2 Temperature sensor

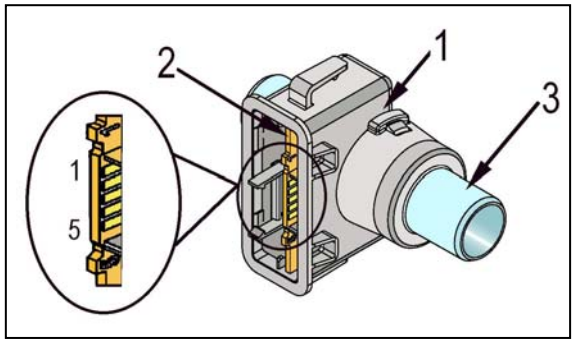
The temperature is controlled by the main board using an NTC temperature sensor.

TEMPERATURE (ºC)	RESISTANCE (Ω)		
	Nominal value	Maximum value	Minimum value
20	6050	6335	5765
60	1250	1278	1222
80	640	620	660

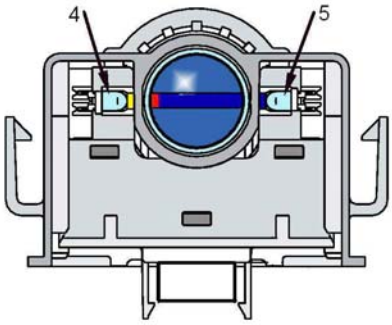
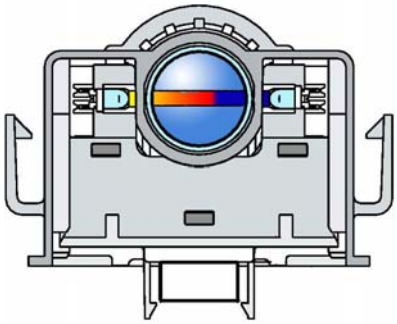
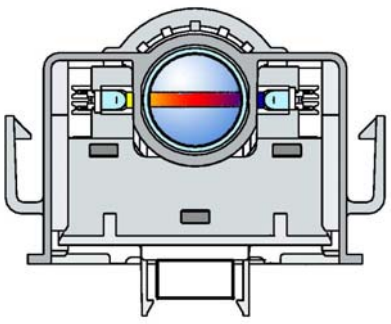
10.12 Turbidity sensor

This sensor is installed only on machines equipped with a recirculation pump.

1. *Housing*
2. *Electronic circuit*
3. *Transparent tube*



The sensor consists of a transparent tube installed in the water circulation circuit. A diode (4) on the side of the tube emits infrared rays (at a frequency of 2.3 KHz, as generated by the electronic circuit) and a phototransistor (5) on the other side of the tube is hit by the rays. The amount of current conducted by the phototransistor depends on the how clear the water is: the clearer the water, the more current the phototransistor conducts and, as a result, the higher the voltage output from the electronic circuit.

		
Low Conduction	Medium Conduction	Maximum Conduction

The turbidity sensor operates during the Whites and Colours programmes (COTTON).
It does not operate during the 60°C and 40°C Energy Saving programmes and the Night cycle.

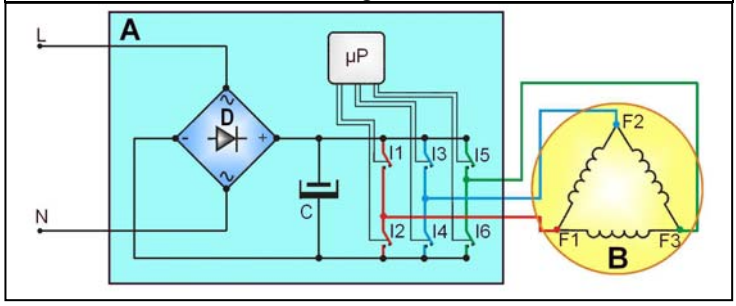
The sensor is calibrated at the end of the wash cycle.
The sensor detects the turbidity of the water at the end of the first rinse and again at the beginning of the second rinse. The relationship between the two measurements is compared with values programmed on the board, and the result of the comparison determines whether another rinse is carried out.

10.13 Inverter

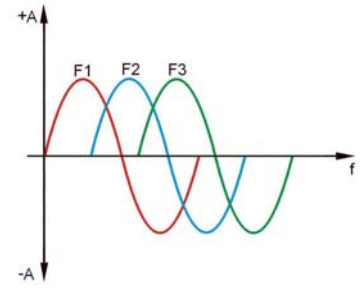
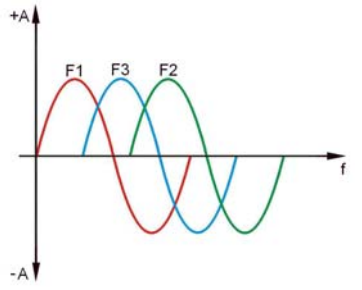
The EWM3000 electronic control system uses a new 2-pole, three-phase, asynchronous motor offering high performance at low noise levels.

L = Phase
N = Neutral
A = Inverter board
B = Motor
C = Condenser
D = Diodes
I1-6 = Switches
F1-3 = Motor connectors
µP = Microprocessor

General circuit diagram of the inverter



A newly designed circuit board (A) is used to convert single-phase power (available in homes) into three-phase power. The amplitude and frequency of the three-phase power can be varied to adjust motor power and RPM, respectively.
Single-phase power (applied to connectors L-N) is rectified by a diode bridge (D) to generate 310 VDC at the poles of condenser C. The combined opening and closing of switches I1-I6 (this switching is performed by the microprocessor) determines the voltage and frequency of the power applied to the motor.

Clockwise motor operation	Counter-clockwise operation
	

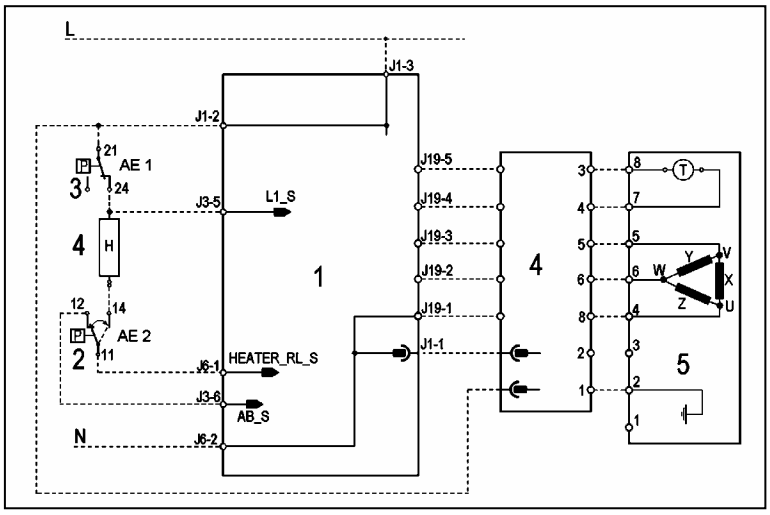
Motor speed is controlled using the signal from a tachometric generator (T).
During spin phases, the microprocessor may perform (depending on the configuration of the software) checks for anti-foam control (if available on the machine) and anti-unbalancing.

- **The electrical components must be serviced by qualified personnel only**
- **Unplug the appliance before accessing internal components**

10.14 Motor

1. *Main board*
2. *Anti-boiling pressure switch AE2*
3. *Anti-boiling pressure switch AE1*
4. *Inverter*
5. *Motor*

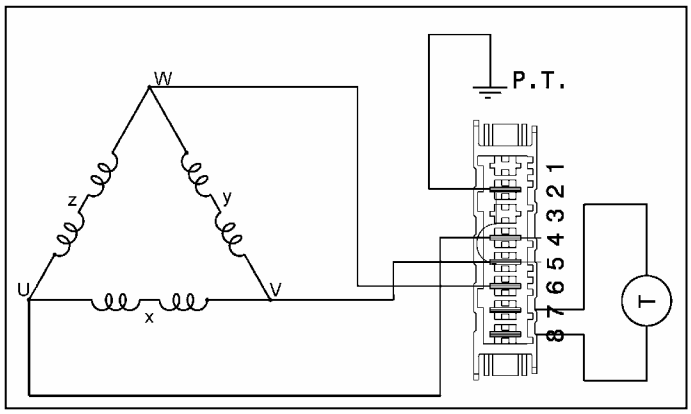
T = tachometric generator
X-Y-X = motor windings



10.15 Power feed to motor

Three-phase power is fed by the inverter (4) to connectors 5-6-8, which are connected to connectors 5-6-4 on the motor (nodes V-W-U), where the windings (Y-X-Z-) are connected. The phase shift between the phases is 120° and peak amplitude is 310V.

The condition of the motor can be determined by measuring the resistance of the windings:



Winding y: ~ 5.4 ohms ±7% (contacts 5-6)

Winding x: ~ 5.4 ohms ±7% (contacts 4-5)

Winding z: ~ 5.4 ohms ±7% (contacts 4-6)

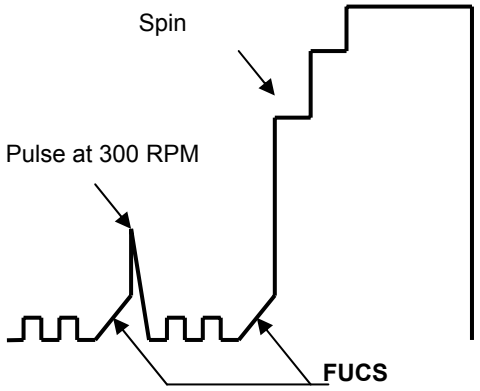
Winding T (tachometric): ~ 121 ohms ±7% (contacts 7-8)

- **The electrical components must be serviced by qualified personnel only**
- **Unplug the appliance before accessing internal components**

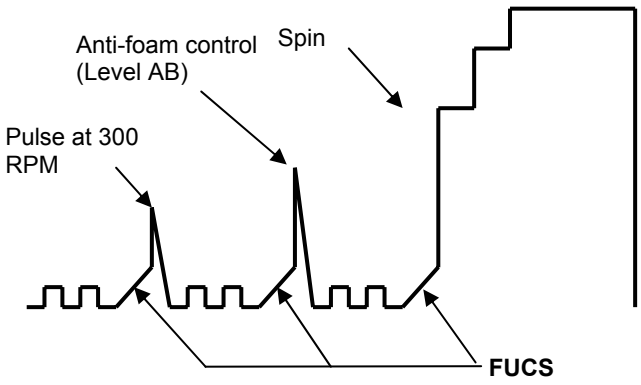
10.16 Anti-foam control system

The anti-foam control system (if installed) is controlled by the anti-boiling pressure switch (AB).

Spin phase without foam



Spin phase with little foam



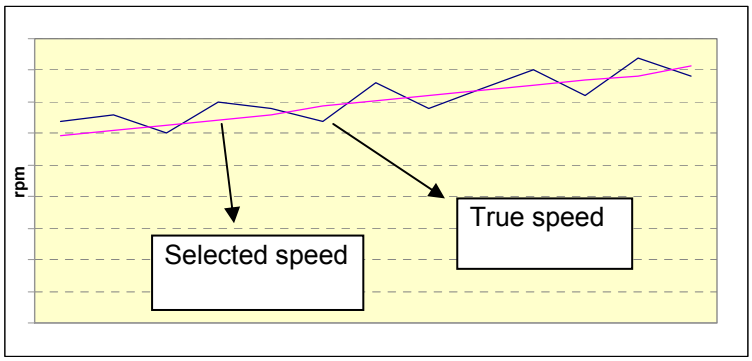
- **Spin phase with little foam:** if the contact of pressure switch AB closes on “full”, the spin phase is interrupted and the drain pump continues to operate. When the contact returns to “empty”, the spin phase resumes.
- **Spin with too much foam in the drum (critical situation):** this condition is signalled if the pressure switch moves to “full” 5 times. If this occurs, the spin phase is skipped and the appliance drains for one minute with the drum stopped. If the spin at the end of the wash phase is skipped, an extra rinse phase is added.

10.17 The FUCS unbalance control system

(**F**ast **U**nbalance **C**ontrol **S**ystem)

The drum is dynamically checked for unbalance before every spin phase:

- The phase begins at a speed of 55 RPM. The speed may not drop below this threshold; if it does, the check is repeated.
- Drum unbalance is calculated every 300 ms and compared with established limits. If the value is lower than the limit, drum speed is increased by a certain amount that depends on the transmission ratio between the motor pulley and the drum. If unbalance is greater than the limit, the speed is decreased by the same amount, which enables the laundry to arrange itself correctly. The process continues until the load is completely balanced.
- Correct balancing of the load occurs at 115 RPM. After this speed is reached, the spin cycle begins.



The unbalance control procedure may be performed in a number of phases. Each phase involves:

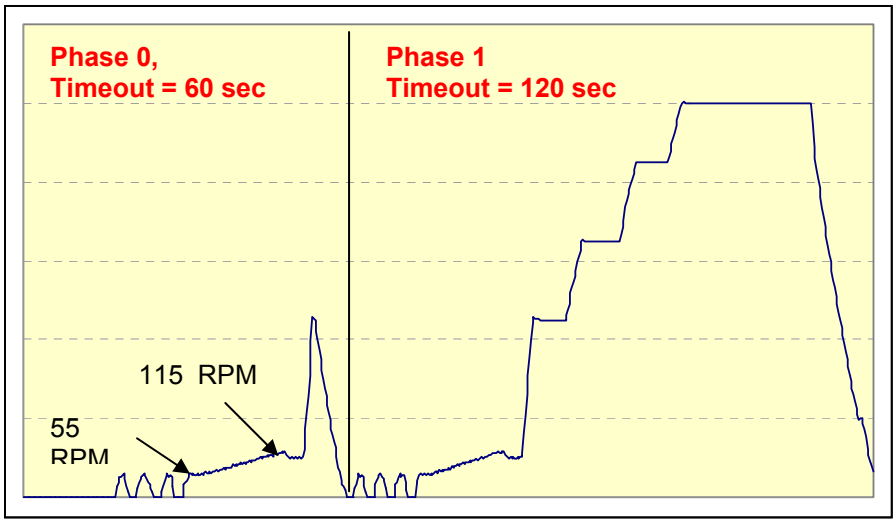
- *an unbalance rating (0-1-2-3)*
- *an unbalance threshold (ex: 350, 650, 850, 1200g)*
- *a timeout*

- **Conclusion of the FUCS procedure**

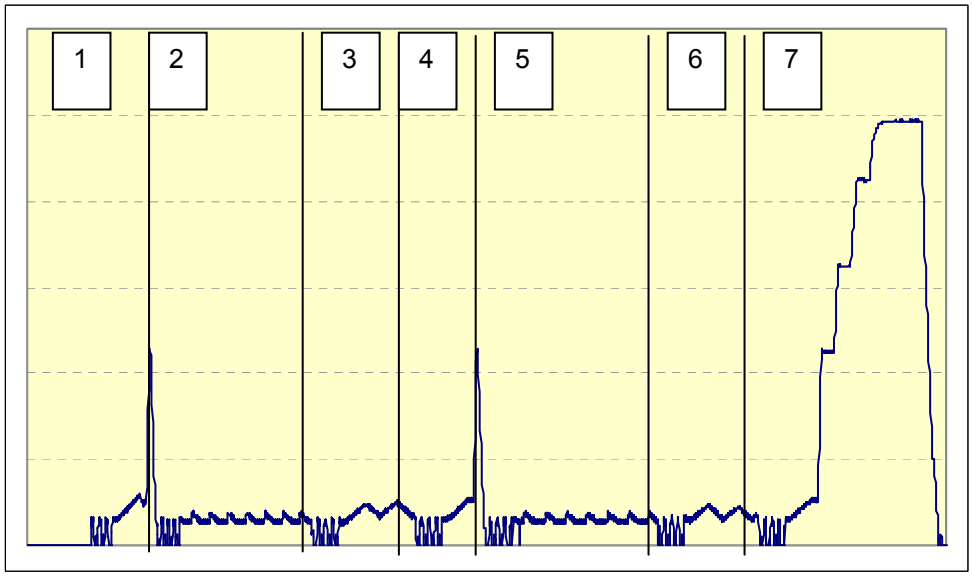
The FUCS procedure is considered to be concluded when:

- The speed of drum rotation is 115 RPM (or 85 RPM for certain unbalance ratings). At this point, the scheduled spin phase is carried out.
- In some cases, optimum balance is not reached and the spin is performed at a lower speed that depends on the level of unbalance.
- In the worst case scenario, a minimum level of balance is not achieved after all the FUCS phases have been performed and the spin phase is skipped.

- **Situation of ideal balance**



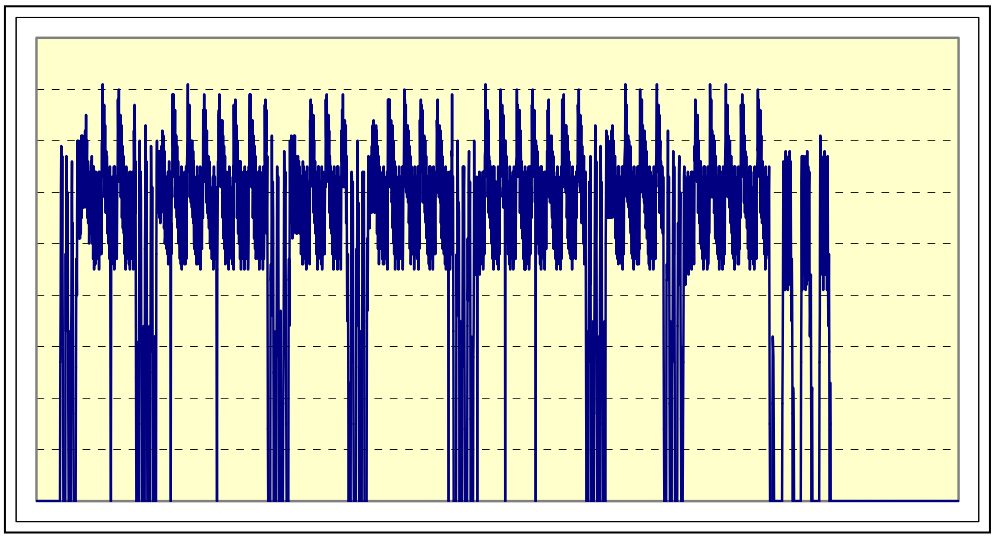
- **An example of drum balancing in the longest interval of time available**



Phase	Unbalance rating	Time-out (sec)
1	0	60
2	1	120
3	2	60
4	3	90
5	1	120
6	2	60
7	3	90

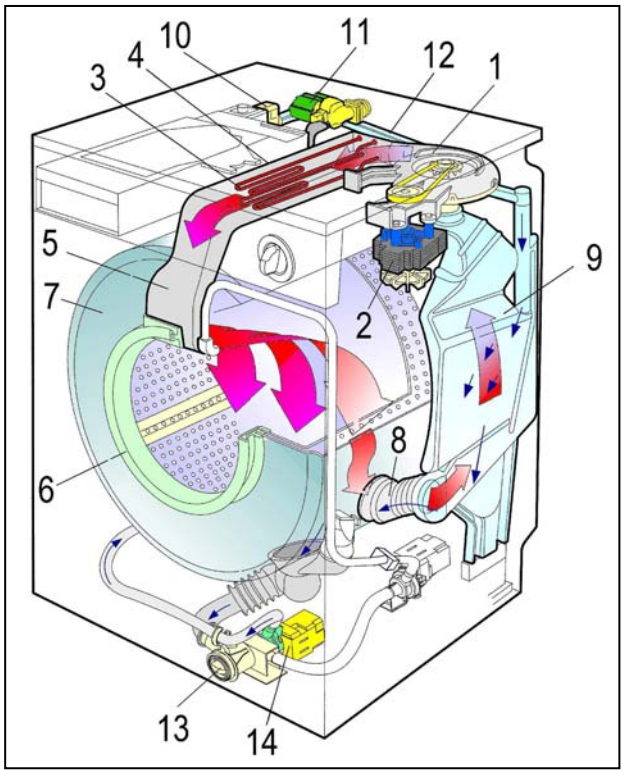
- **An example of unbalance after all FUCS phases have been performed**

In this case, the spin (or pulse operation) is skipped.



11 DRYING CIRCUIT

1. *Fan*
2. *Fan motor*
3. *Drying heater*
4. *Heater casing*
5. *Duct*
6. *Door seal*
7. *Tub*
8. *Tube from tub to condenser*
9. *Drying condenser*
10. *Coupling*
11. *Water fill solenoid*
12. *Condenser water intake and steam vent tube*
13. *Drain filter*
14. *Drain pump*



Automatic drying cycles: the drying time is governed by the microprocessor so that the desired degree of dryness is achieved.

The drying cycle can be performed at the end of the washing cycle, or as a separate programme. Various types of drying can be selected:

- extra-dry
- cupboard-dry
- iron-dry

Time-controlled cycle: the drying time is selected by the user (maximum 130 minutes for cotton and synthetic fabrics).

Cooling: a cooling cycle is performed at the end of every drying cycle.

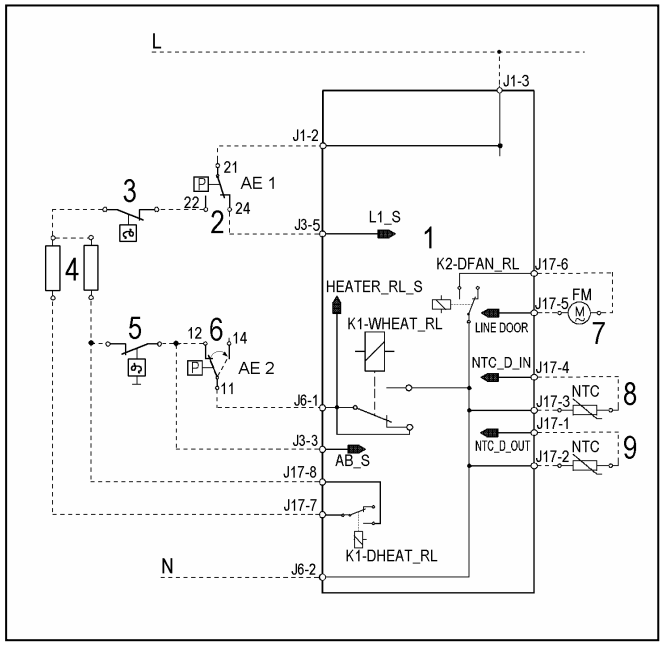
The drying heaters are powered directly by the main board via two relays and the contacts of the safety pressure switch.
In cycles for synthetic fabrics, drying is performed with only one heater switched on (half power); in cotton/linen cycles, both the heaters are switched on (full power).

The fan motor is powered via a relay; the **condensation solenoid** is powered by a triac.

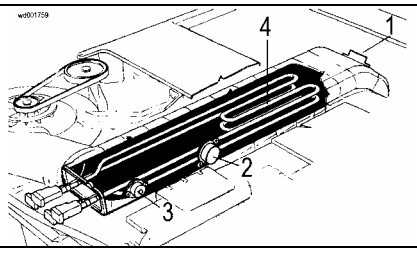
11.1 Temperature control

The drying temperature is controlled by an NTC sensor positioned on the duct. The heater casing features two safety thermostats (one of which is a manual-reset type).

1. *Circuit board*
2. *Anti-boiling pressure switch AE1*
3. *Safety thermostat (auto-reset)*
4. *Drying heater*
5. *Safety thermostat (manual reset)*
6. *Anti-boiling pressure switch AE2*
7. *Fan motor*
8. *Drying control sensor (NTC)*
9. *Humidity control sensor (NTC)*



1. *Drying temperature control thermostat (NTC)*
2. *Safety thermostat (auto reset)*
3. *Manual-reset safety thermostat (150°C)*
4. *Drying heater*

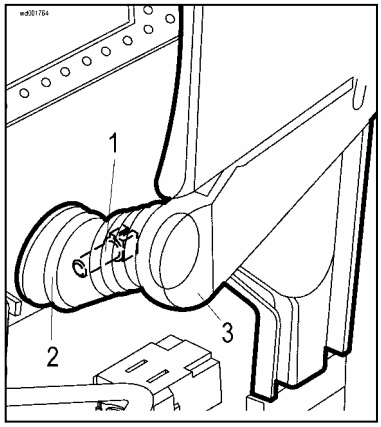


NTC sensor: resistance at 25°C		5000Ω	
Manual-reset safety thermostat		Normally closed Opens at 150°±5°C	
Auto-reset safety thermostat		Normally closed Opens at 110°±3°C Closes at 94°±5°	
Heater group	**Power**	920+920 W	
	Voltage	230V	240V
	Resistance	56,5Ω+56,5Ω	61,5Ω+61,5Ω
Fan capacity		80 m^3 – ora	

Calculating the drying time:

In automatic cycles, the NTC sensor fitted to the drying condenser is used to calculate the drying time.

1. *NTC temperature sensor*
2. *Tube from tub to condenser*
3. *Drying condenser*

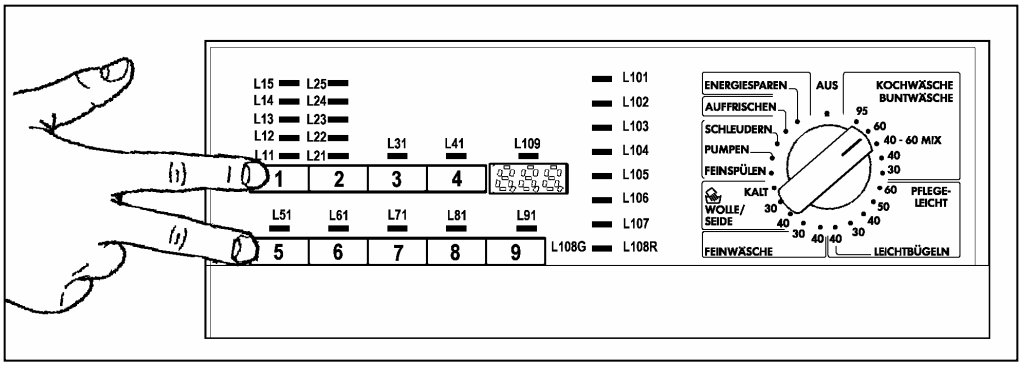


12 DEMO MODE

A special demo cycle enables these appliances to be demonstrated in stores without the need for connection to the plumbing system. Any programme on the machine can be selected and, after the start button is pressed, the appliance performs certain phases in that programme (and not those that cannot be executed, such as water fill, draining and heating).
The cycle is carried out in the following way:

- the door lock unit operates normally (the door is locked during operation and can be opened at the end of the cycle or during a pause)
- motor: all low speed movements are performed; pulse and spin operation is disabled
- the water fill solenoid valves and drain pump are disabled
- display: since the phases in the demo cycle are very quick (one second corresponds to one minute of a real cycle), the time until the end of the cycle decreases by one unit every second. It must be remembered that the “time until end of the cycle” does not always correspond to the real time of a cycle.
- alarms: for safety reasons, the following alarm families are enabled: E40 (door closure), E50 (motor) and E90 (communication between circuit boards/configuration).

12.1 Selecting demo mode



- Switch off the appliance
- Press buttons **1** and **5** (or **2** and **6**) at the same time; holding these two buttons down, turn the programme selector **two positions to the right (i.e. clockwise)**.
- Hold down buttons **1** and **5** until the LEDs beging to flash (5 seconds approx.).

The time required for running a cycle in Demo mode depends on the programme chosen.

12.2 Exiting demo mode

- Switch off the appliance to exit Demo mode.

13 DIAGNOSTICS MODE

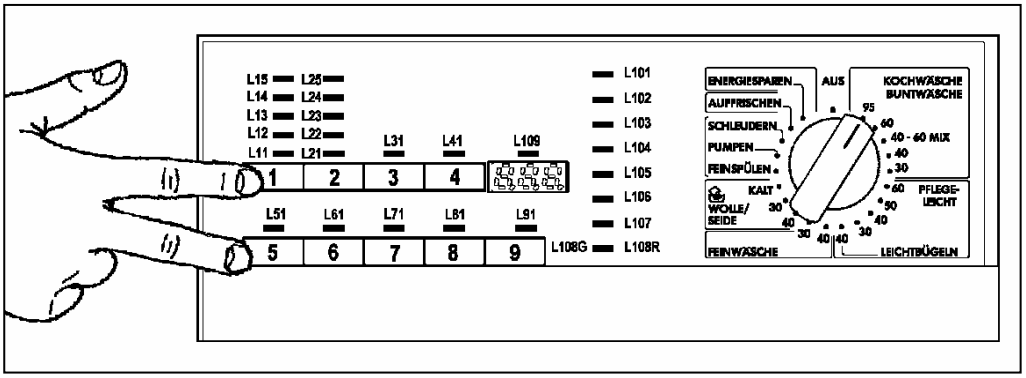
13.1 Accessing diagnostics mode

Diagnostics mode, which can be accessed with a single procedure, allows the operator:

- To check the operation of components in the appliance
- To read / cancel alarms

The diagnostic test cycles are available only if the main board can communicate properly with the display board and only if the appliance is configured correctly.

To access diagnostics mode:



1. If a programme has been selected, cancel it by switching off the appliance.

2. Press buttons **1** and **5** (or buttons **2** and **6**) at the same time; holding these two buttons down, switch on the appliance by turning the programme selector **one position to the right (i.e. clockwise)**.

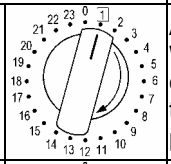
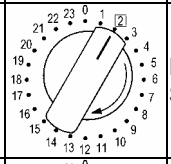
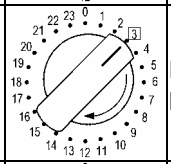
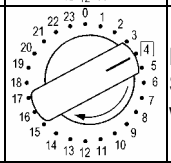
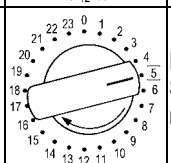
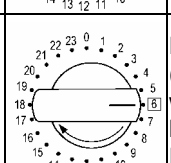
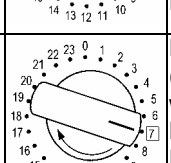
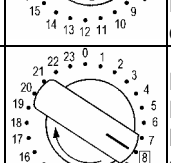
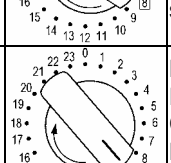
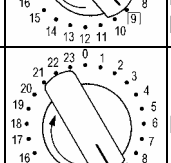
In the first position, the system tests the operation of the buttons and the corresponding LEDs. Turn the programme selector **clockwise** to perform the diagnostics tests for the various components and to read the alarms.

13.2 Exiting diagnostics mode

↳ To exit diagnostics mode, switch the appliance **off**, then **on**, then **off** again.

13.3 Phases of the diagnostics cycle

Irrespective of the type of programme selector, after activating the diagnostics system, the selector can be turned **clockwise** to effect diagnostics on the operation of the various components and to read the alarms.
In models with digital displays, the code corresponding to the position of the selector is displayed for one second.
All alarms are enabled during the diagnostics cycle. If an alarm should occur during the diagnostics cycle, operation of the machine is interrupted and the LEDs (and the display) flash to indicate the corresponding code.

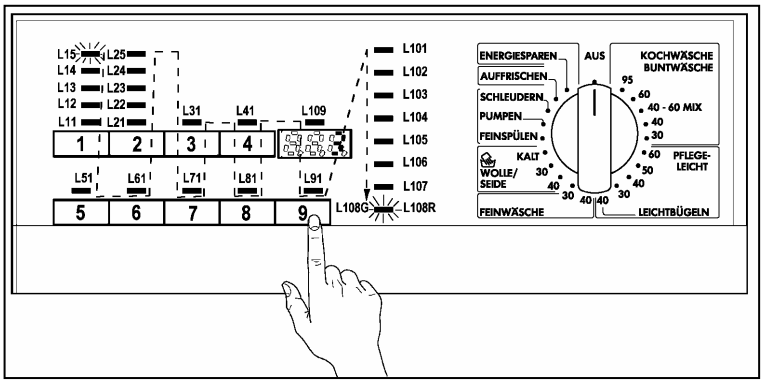
Phases in the diagnostic test					
Selector position		**Components activated**	**Operating conditions**	**Function checked**	**Parameters displayed (1)**
1		All the LEDs light up in sequence. When a button is pressed, the corresponding LED lights up (and the buzzer sounds, if programmed)	Always active	Operation of user interface	Button coding
2		Door lock unit. Solenoid valve for wash cycle	Door closed. Water level below anti-overflow threshold. Max. time: 5 min.	Water fill through detergent dispenser	(**) selector position code
3		Door lock unit. Solenoid valve for prewash cycle.	Door closed. Water level below anti-overflow threshold. Max. time: 5 min.	Water fill through prewash dispenser (bleach)	(**) selector position code
4		Door lock unit. Solenoid valves for prewash and wash cycles.	Door closed. Water level below anti-overflow threshold. Max. time: 5 min.	Water fill through fabric softener dispenser	(**) selector position code
5		Door lock unit. Solenoid valves for bleach/ stain remover.	Door closed. Water level below anti-overflow threshold. Max. time: 5 min.	Water fill through bleach/ stain remover compartment	(**) selector position code
6		Door lock unit. (Solenoid valve for wash cycle if water in drum is lower than 1st level). Heating element.	Door closed. Water at 1st level. Max. heating time of 10 min. or until temp. reaches 90ºC. **(*)**	Heating	(**) selector position code
7		Door lock unit. (Solenoid valve for wash cycle if water in drum is not at 1st level). Motor (55 RPM clockwise, 55 RPM counter-clockwise, pulse operation to 250 RPM)	Door closed. Water at 1st level.	Check for water leaks from drum	(**) selector position code
8		Door lock unit. Drain pump. Motor to 650 RPM, then max. spin speed.	Door closed. Water level below anti-boiling level for spin cycle	Drain and spin, check for proper closure of all level-sensing pressure switches	(**) selector position code
9		Drying heater Fan Condensation solenoid Drain pump Motor	Door closed	Drying	(**) selector position code
10		Readout/cancellation of last alarm	---	---	Alarm code
11, 12 ...24		All the LEDs light up in sequence. When a button is pressed, the corresponding LED lights up (and the buzzer sounds, if installed/activated)			

(*) This time is usually long enough for checking the heating system. The time can be increased by repeating the phase without draining the water; to accomplish this, momentarily select another diagnostic phase and then reselect the heating test (if the temperature exceeds 80°C, the heating test will not be performed).
(**) See table, page 62
(1) Models with display

13.3.1 Diagnostic test of display board and LEDs

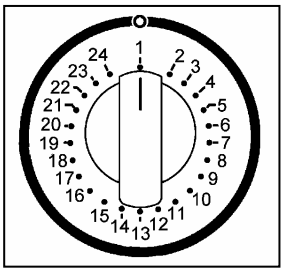
After accessing the diagnostics system, the display board is checked. All the LEDs and the display (if featured) light in sequence.

When the buttons are pressed, the corresponding or nearby LED lights; the display shows the hexadecimal code corresponding to the code for the button pressed.



13.3.2 Programme selector

The table below lists the closure of contact C6 (common) with the rest of the contacts (C1 – C5) on the programme selector in the various positions and the corresponding code. The code is displayed only on aappliances featuring a display panel.



Position of selector	Closure of selector contact (C6 is the common contact)					Code displayed (1)
24-position type	**C1**	**C2**	**C3**	**C4**	**C5**	
1 - cancel	0	1	1	1	1	**1 E**
2	0	1	0	0	1	**0 6**
3	0	1	1	0	0	**1 4**
4	0	1	0	1	0	**0 C**
5	0	1	1	1	0	**1 C**
6	0	0	0	1	1	**0 A**
7	1	0	0	0	0	**0 1**
8	1	0	0	0	1	**0 3**
9	1	0	0	1	0	**0 9**
10	0	1	0	1	1	**0 E**
11	0	0	1	0	1	**1 2**
12	1	0	0	1	1	**0 b**
13	1	0	1	0	0	**1 1**
14	0	0	1	1	0	**1 8**
15	1	0	1	0	1	**1 3**
16	0	0	1	1	1	**1 A**
17	1	0	1	1	0	**1 9**
18	1	0	1	1	1	**1 b**
19	1	1	0	0	0	**0 5**
20	0	1	1	0	1	**1 6**
21	0	0	0	0	1	**0 2**
22	0	1	0	0	0	**0 4**
23	0	0	0	1	0	**0 8**
24	0	0	1	0	0	**1 0**

1= This code is shown on the display

14 ALARMS

14.1 Display of alarms to the user

The alarm system is configured; that is, some or all of the alarms can be partially or totally displayed to the user, depending on the model involved.

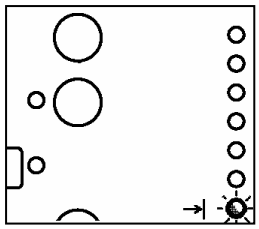
The following alarm families are displayed to the user:
E10 – Problem with water filling
E20 – Problem with draining
E40 – Problem with closing the door
E 90 – Problem with configuring the appliance

Alarms are active during execution of the wash programme only (except for alarms on appliance configuration and power supply voltage/frequency, which are also shown during programme selection).
Generally, unless otherwise specified, the door can be opened during an alarm if:
- The water level in the drum is lower than a level that depends on the configuration of the appliance
- Water temperature is lower than 55°C

Some alarms require the following cycle before the door can be opened:
- Cold water fill if temperature exceeds 65°C
- Drain until analogue pressure switch signals “empty” within a timeout of 5 minutes.

14.1.1 How alarms are displayed during normal operation

The user is shown the alarm family on the display (if installed) and the end-of-cycle LED flashes repeatedly (0.4 seconds lit ⇨ 0.4 seconds off ⇨ pause of 2.5 seconds between flashes).
This LED is always installed on models without a display, although the LED may be located in different positions.



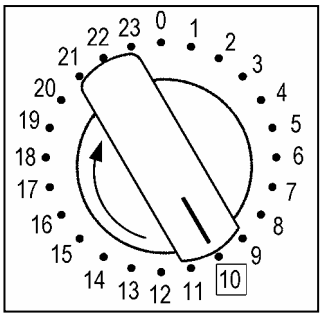
For example, if the user forgets to close the door, the system signals alarm E41 approx. 15 seconds after the cycle is started, the cycle is paused, and the display (if installed) shows E40.

At the same time, the end-of-cycle LED flashes in the sequence illustrated on the table.
The four flashes indicate the first digit of the two digits making up alarm E**4**1 (alarms regarding the same function are grouped together in families).

In this case, the programme can be restarted by pressing the start button.

End-of-cycle LED →|		
Lit / Off	**Time (Sec.)**	**Value**
☀	0.4	1
○	0.4	
☀	0.4	2
○	0.4	
☀	0.4	3
○	0.4	
☀	0.4	**4**
○	0.4	
○	2.5	Pauses between sequences

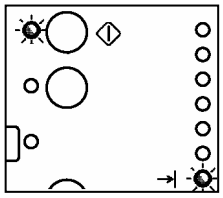
14.2 Reading alarms



To read the last alarm stored in EEPROM on the main board:

- Access diagnostics mode
- Irrespective of the configuration of the circuit board and the type of selector, turn the programme selector **clockwise** to the **tenth** position.

14.2.1 Displaying an alarm



Alarms are shown on the display (if installed) and by repeating sequences of flashes on two LEDs (0.4 seconds lit ⇨ 0.4 seconds off ⇨ pause of 2.5 seconds between sequences).
The buzzer, if installed, produces beeps that are synchronized with the flashing LEDs.

- **END OF CYCLE LED** → shows the first digit (family identifier) of the alarm code
- **START/PAUSE LED**→ shows the second digit (identifier within the family) of the alarm code

These two LEDs are installed on all models without a display, even though **they may be located in different positions** and they flash at the same time.
Note:

- The first letter of the alarm code "**E"** (Error) is not displayed because it is common to all alarms.
- The families of alarm codes are expressed in hexadecimal form, so the letter:
  → **A** is represented by **10 flashes**
  → **B** is represented by **11 flashes**
  → ...
  → **F** is represented by **15 flashes**
- Configuration errors are shown by a series of flashing LEDs (indicating that the user interface is not configured).

14.2.2 Sample alarm display

Alarm E43 would be displayed in the following way:

- **E43** is shown on the display **(if installed)**
- a sequence of **four** flashes of the **End-of-cycle LED** shows the first digit: E**4**3;
- a sequenza of **three** flashes of the **Start/Pause LED** shows the second digit: E4**3**;

End-of-cycle LED		→|	**Start/Pause LED**		⏀
On / Off	**Tempo (Sec.)**	**Value**	**On / Off**	**Tempo (Sec.)**	**Value**
☼	0.4	1	☼	0.4	1
○	0.4		○	0.4	
☼	0.4	2	☼	0.4	2
○	0.4		○	0.4	
☼	0.4	3	☼	0.4	**3**
○	0.4		○	0.4	
☼	0.4	**4**	○	3.3	Pause
○	0.4				
○	2.5	Pause			

14.2.3 Behavior of alarms during the diagnostic test

All alarms are operational during the diagnostic test on components. When the selector is turned to pass from one test phase to another, it exits any associated alarm condition and performs the next selected test (if the alarm does not recur).

14.3 Notes on the behavior of certain alarms

- **Configuration alarms**

- **E91**: this error is indicated by the flashing of all the LEDs, and E90 is shown on the display if installed
- **E92**: this error is indicated by the flashing of the LEDs located above the buttons, and E90 is shown on the display if installed
- **E93**: this error is indicated by the flashing of the LEDs indicating phases/warnings, and E90 is shown on the display if installed
- **E95**: this error is indicated by the flashing of all the LEDs, and E90 is shown on the display if installed

- **Alarms EB1-EB2-EB3:** if the feed from the power supply is faulty, the machine will remain in the alarm mode until the masters frequency or voltage returns to normal values or the appliance is switched off. If this occurs, the "**EB0**" alarm family is displayed (on some appliances, the display of alarms is disabled), the diagnostic mode cannot be accessed, and the "quick readout of alarms" mode cannot be used. The alarm can be read only after the abnormal situation is corrected.

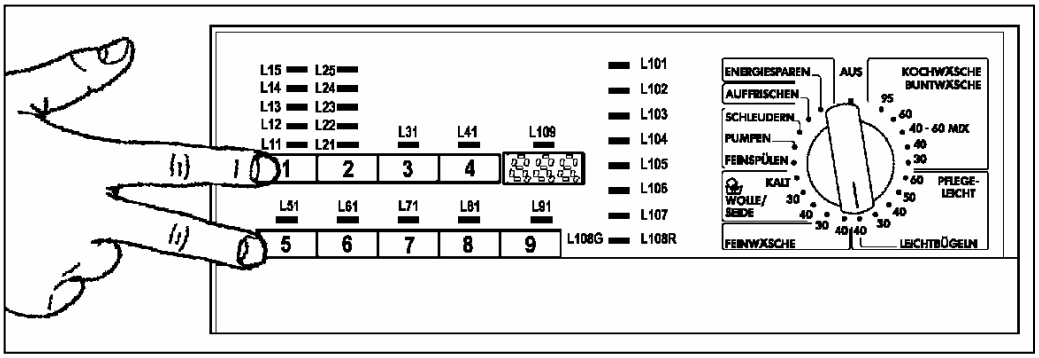
14.4 Quick display of alarms

The last alarm that has occurred can be displayed even if it is not in the tenth diagnostic position or the machine is in the normal operating mode (for example, while the wash programme is in progress):

- Press and hold down buttons **1** and **2** simultaneously for at least 2 seconds: the LEDs will first switch off and will then show the sequence of flashes which indicates the alarm, or the code will be shown on the display.
- The alarm sequence will continue for as long as the buttons are held down
- The method for interpreting this alarm is the same as the one described in paragraph 10.2.
- While the alarm is displayed, the appliance will continue to operate. If the appliance is in the programme selection mode, the options previously chosen will remain selected.

14.5 Canceling the last alarm

After reading an alarm, it is good practice to delete it from memory in order to check whether it recurs during the diagnostic test performed after the appliance is repaired.



1. Enter diagnostics mode and turn the selector to the **tenth** position (readout of alarms)
2. Press buttons **1** and **5** at the same time.
3. Hold buttons **1** and **5** pressed down for about 5 seconds.

14.6 List of alarms

Alarm	Description	Possible malfunction	Action/status of machine	Reset
E11	**Poor water fill before wash cycle**	Tap closed or water pressure too low; Drain tube improperly positioned; Water fill solenoid valve is defective; Leaks from water circuit on pressure switch; Pressure switch defective; Wiring defective; Main board defective.	Cycle is paused with door locked	Start
E12	**Difficulty in water fill during drying (maximum time 3 min. water fill in drying during the wash load unrolling phase)**	Tap closed or water pressure too low; solenoid valve; pressure switch water circuit; pressure switches; wiring; main board.	Cycle is paused	Start
E13	**Water leaks**	Drain tube improperly positioned; Water pressure too low; Water fill solenoid valve is defective; Water circuit on pressure switch is leaking/clogged; Pressure switch defective.	Cycle is paused with door locked	Start
E21	**Poor draining**	Drain tube kinked/clogged/improperly positioned; Drain filter clogged/dirty; Drain pump defective; Pressure switch defective; Wiring defective; Main board defective; Electrical current leak between heating element and ground.	Cycle is paused	Start
E22	**Difficulty in water fill during drying or drying condenser clogged (anti-boiling pressure switch closed on "FULL")**	Drain hose kinked; filter clogged: drying condenser clogged; drain pump faulty; pressure switches faulty; wiring; main circuit board defective; current leakage between heater and ground.	Cycle is paused	Start
E23	**Defective triac for drain pump**	Drain pump defective; Wiring defective; Main board defective.	Emergency drain procedure - Cycle stops with door unlocked	OFF/reset
E24	**Malfunction in sensing circuit on triac for drain pump**	Main board defective.	Emergency drain procedure - Cycle stops with door unlocked	OFF/reset
E31	**Malfunction in pressure switch circuit (frequency of signal from pressure switch out of limits)**	Pressure switch; Wiring; Main board;	Cycle stops with door locked	OFF/reset
E32	**Electronic pressure switch improperly calibrated (level on electronic pressure switch differs from 0-66 mm after initial calibration drain and when anti-boiling pressure switch is on "empty").**	Tap is closed or water pressure is too low; Solenoid valve; Water circuit on pressure switches; pressure switches; Wiring; main board;	Cycle is paused	Start
E33	**Inconsistency between level on electronic pressure switch and level on anti-boiling pressure switch 1-2 (fault persists for at least 60 sec.).**	Pressure switch defective; Electrical current leak between heating element and ground; Heating element; Wiring defective; Main board defective. Water circuit;	Emergency drain procedure - Cycle stops with door unlocked	OFF/reset
E34	**Inconsistency between level on electronic pressure switch and level on anti-boiling pressure switch 2 (fault persists for at least 60 sec.).**	Pressure switch defective; Electrical current leak between heating element and ground; Heating element; Wiring defective; Main board defective. Water circuit;	Emergency drain procedure - Cycle stops with door unlocked	OFF/reset
E35	**Overflow**	Water fill solenoid valve is defective; Leaks from water circuit on pressure switch; Pressure switch defective; Wiring defective; Main board	Cycle stops. Emergency drain procedure. Drain pump continues to	OFF/reset

Alarm	Description	Possible malfunction	Action/status of machine	Reset
		defective.	operate (5 min. on, then 5 min. off, etc.).	
E36	**Sensing circuit on anti-boiling pressure switch 1 defective**	Main board defective.	Cycle stops with door locked	OFF/reset
E37	**Sensing circuit on anti-boiling pressure switch 2 defective**	Main board defective.	Cycle stops with door locked	OFF/reset
E38	**Internal pressure takeoff is clogged (water level does not change for at least 30 sec. of drum rotation).**	Water circuit on pressure switches; Pressure switches; Motor belt broken;	Heating phase is skipped	---
E39	**Defective HV sensing on anti-overflow system**	Main board defective.	Cycle stops with door locked	OFF/reset
E3A	**Faulty sensing by heating resistance relay**	Main board defective.	Cycle stops with door locked	OFF/reset
E41	**Door unlocked**	Door lock unit defective; Wiring defective; Main board defective.	Cycle is paused	Start
E42	**Problems closing the door**	Door lock unit defective; Wiring defective; Main board defective	Cycle is paused	Start
E43	**Defective triac supplying power to door delay system**	Door lock unit defective; Wiring defective; Main board defective.	(Emergency drain procedure) Cycle stops	OFF/reset
E44	**Defective sensing by door delay system**	Main board defective.	(Emergency drain procedure) Cycle stops	OFF/reset
E45	**Defective sensing by triac on door delay system**	Main board defective.	(Emergency drain procedure) Cycle stops	OFF/reset
E52	**No signal from tachometric generator on motor**	Motor defective; Wiring defective on inverter for motor; Inverter board defective.	Cycle stops with door locked (after 5 attempts).	OFF/reset
E57	**Inverter is drawing too much current (>15A)**	Motor defective; Wiring defective on inverter for motor, inverter board defective.	Cycle stops with door locked (after 5 attempts).	OFF/reset
E58	**Motor is drawing too much current (>4.5A)**	Motor defective; Wiring defective on inverter for motor, inverter board defective, abnormal motor operation (motor overloaded).	Cycle stops with door locked (after 5 attempts).	OFF/reset
E59	**No signal from tachometric generator for more than 3 seconds**	Motor defective; Wiring defective on inverter for motor; Inverter board defective.	Cycle stops with door locked (after 5 attempts).	OFF/reset
E5A	**Overheating on heat dissipater for inverter**	Inverter board defective. NTC open (on the inverter board). Overheating caused by continuous operation or ambient conditions (let appliance cool down)	Cycle stops with door locked (after 5 attempts).	OFF/reset
E5B	**Input voltage is lower than 175V**	Wiring defective, Inverter board defective	Cycle stops with door locked (after 5 attempts).	OFF/reset
E5C	**Input voltage is too high**	Inverter board defective, the masters voltage is too high (measure the masters voltage)	Cycle stops with door locked (after 5 attempts).	OFF/reset
E5D	**Data transfer error between inverter and main board**	Line interference, Wiring defective, defective main board or inverter board	Cycle stops with door locked (after 5 attempts).	OFF/reset
E5E	**Communication error between inverter and main board**	Defective wiring between main board and inverter board, Defective inverter board, defective main board.	Cycle stops	OFF
E5F	**Inverter board fails to start the motor**	Defective inverter board, Defective wiring, defective main board	Cycle stops with door locked (after 5 attempts).	OFF/reset
E61	**Insufficient heating during wash cycle**	Defective NTC sensor for wash cycle; Heating element defective; Wiring	Heating phase is skipped	Start

Alarm	Description	Possible malfunction	Action/status of machine	Reset
		defective; Main board defective.		
E62	**Overheating during wash cycle**	Defective NTC sensor for wash cycle; Heating element defective; Wiring defective; Main board defective.	Emergency drain procedure - Cycle stops with door unlocked	OFF/reset
E66	**Relay supplying power to heating element defective**	Main board defective; Electrical current leak from heating element to ground.	Emergency drain procedure - Cycle stops with door unlocked	OFF/reset
E71	**NTC sensor for wash cycle defective**	Defective NTC sensor; Wiring defective; Main board defective.	Heating is skipped	Start
E72	**Fault in NTC sensor on drying condenser (voltage out of range = short-circuit, open circuit)**	Drying NTC sensor (condenser) defective; wiring defective; main circuit board defective.	Heating is skipped	Start
E73	**Fault in NTC sensor on drying duct (voltage out of range = short-circuit, open circuit)**	Drying NTC sensor (duct) defective; wiring defective; main circuit board defective.	Heating is skipped	Start
E74	**NTC sensor for wash cycle improperly positioned**	NTC sensor improperly positioned; Defective NTC sensor; Wiring defective; Main board defective.	Heating is skipped	Start
E75	**Error in selector reset position**	Main circuit board defective (incorrect configuration data). Selector; wiring.	- - -	OFF/reset
E76	**Error in selector reading**	Main circuit board defective (incorrect configuration data). Selector; wiring.	Cycle is cancelled	- - -
E84	**Recirculation pump defective (inconsistency between the state of the sensing circuit for the recirculation pump and the state of the triac)**	Recirculation pump; Wiring; Main board;	Machine drains and cycle stops (with door unlocked)	OFF/reset
E85	**Defective sensing circuit on triac for recirculation pump (input voltage on microprocessor remains at 0 or 5 V).**	Main board	Machine drains and cycle stops (with door unlocked)	OFF/reset
E91	**Communication error between main board and display board**	Wiring defective; Control/display board defective Main board defective.	Cycle stops	---
E92	**Inconsistency in communication between main board and display board (versions not compatible)**	Wrong control/display board; Wrong main board (not right for model).	Cycle stops	---
E93	**Configuration error on appliance**	Main board defective (Improper programming).	Cycle stops	OFF/reset
E94	**Configuration error on wash cycle**	Main board defective (Improper programming).	Cycle stops	OFF/reset
E95	**Communication error between microprocessor and EEPROM**	Main board defective.	Cycle stops	OFF/reset
E97	**Inconsistency between list of programmes and configuration of cycle**	Main board defective (Improper programming).	Cycle stops	OFF/reset
EB1	**Frequency of power supplied to appliance out of limits**	Problems with the power masters (wrong power/interference); Main board defective.	Cycle stops	---
EB2	**Input voltage too high**	Problems with the power masters (wrong power/interference); Main board defective.	Cycle stops	---
EB3	**Input voltage too low**	Problems with the power masters (wrong power/interference); Main board defective.	Cycle stops	---
EBE	**Inconsistency between safety relay and sensing circuit**	Main board defective, defective wiring	Machine drains and cycle stops (with door unlocked)	OFF/reset

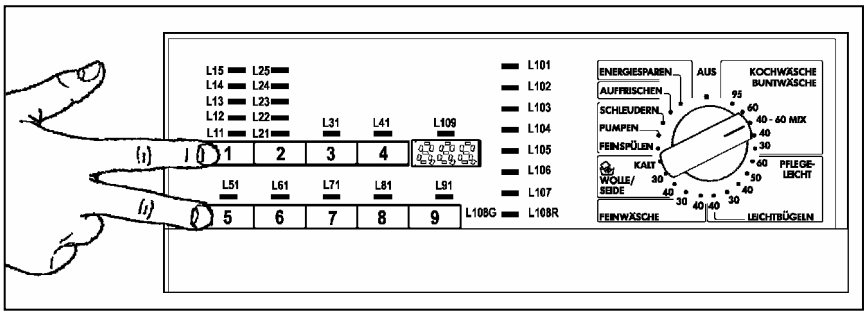
Alarm	Description	Possible malfunction	Action/status of machine	Reset
EBF	**Sensing circuit on safety system defective (input voltage on microprocessor remains at 0 or 5 V).**	Main board defective	Machine drains and cycle stops (with door unlocked)	OFF/reset
EC1	**Solenoid valve inoperative but flow meter operating**	Main board defective, Solenoid valve defective	Cycle stops with door locked (after 5 attempts).	OFF/reset
EC2	**Signal from turbidity sensor out of limits**	Turbidity sensor defective, Main board defective, Wiring defective	----------	Start/reset
EF1	**Drain filter clogged (drain cycle too long)**	Drain tube clogged/kinked/placed too high; Drain filter dirty/clogged.	Warning is displayed at end of cycle (relative LED is lit)	---
EF2	**Too much detergent (too much foam during drain cycles)**	Too much detergent used; Drain tube clogged/kinked; Drain filter dirty/clogged.	Warning is displayed at end of cycle (relative LED is lit)	---
EF3	**“Water Control” system tripped**	Water leaks onto base frame; water control system defective.	Machine drains and cycle stops	OFF/reset
EF4	**Water fill pressure too low, no signal from flow meter and solenoid valve is open**	Tap closed, water pressure too low	----------	Reset
E00	**No alarm**	---	---	---

15 OPERATING TIME COUNTER

Using a specific procedure, the operator can display the total operating time for the appliance, which is counted from the moment it is first switched on.
This option is available only on models equipped with a display. The unit can count up to a maximum of **6550** hours of operating time.

- Only the operating time of normal programmes (and not diagnostic programmes) is counted
- The actual operating time for the cycle is counted (which does not include pauses, delayed start time, time of a stop with water in the drum, and soaking phases)
- The precision of the counter is 30 seconds per programme
- Only whole hours of operation are counted (1 hr and 59 min = 1 hr)

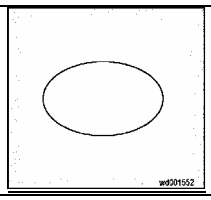
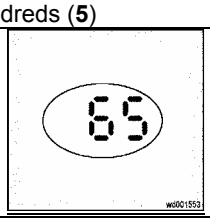
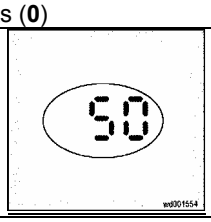
15.1.1 How to access the total operating time



1. Switch off the appliance
2. Press and hold down buttons **1** and **5** at the same time. Now, keeping the buttons pressed, switch on the appliance by turning the selector three positions clockwise
3. Hold buttons **1** and **5** down for at least 2 seconds

15.1.2 Display of total operating time with LEDs

This time is displayed two digits at a time. The first two digits indicate the thousands and hundreds. The second two digits indicate the tens and units.
For example, if the operating time is **6550** hours, the display will show the following sequence:

1 →	**2 →**	**3 →**
Nothing is displayed for two seconds	The following digits are displayed for two seconds: ↬ thousands (**6**) ↬ hundreds (**5**)	The following digits are displayed for the next two seconds: ↬ tens (**5**) ↬ units (**0**)
		

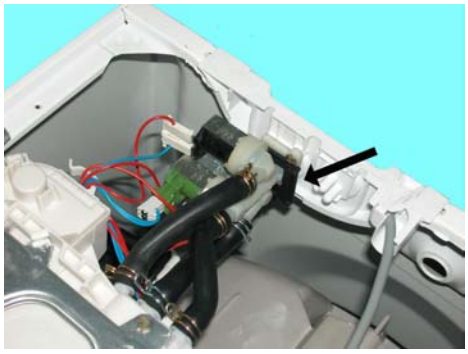
16 ACCESSING COMPONENTS

Procedures for accessing specific components on the appliance are described in this section. For information on other procedures, see the general service manual for P6000 washing machines (599 35 23-17)

- **The electrical components must be serviced by qualified personnel only**
- **Unplug the appliance before accessing internal components**

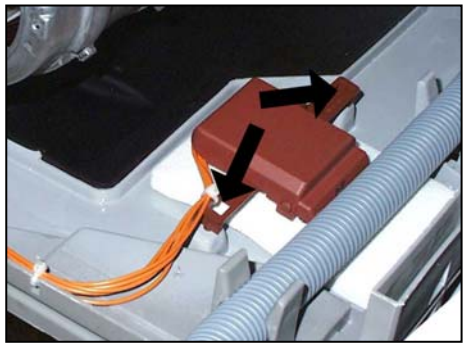
16.1 Flow meter

If the flow meter malfunctions, the entire solenoid valve assembly must be replaced.

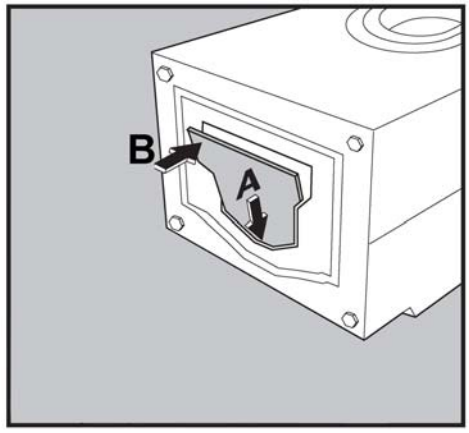


16.2 Aqua Control

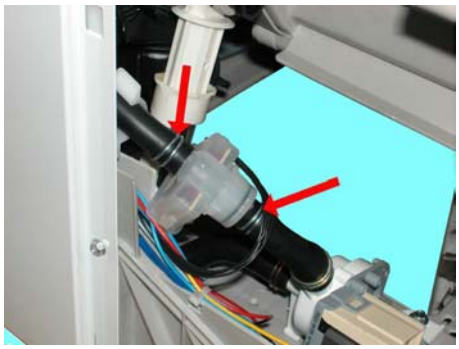
- Disconnect the connector
- Insert a screwdriver into the holes indicated by the arrows and release the fasteners that attach the component to the base frame.



- To attach the cover onto the base frame:
- First, slide in the part indicated by the arrow (A), then push the cover in the direction shown by the arrow (B).

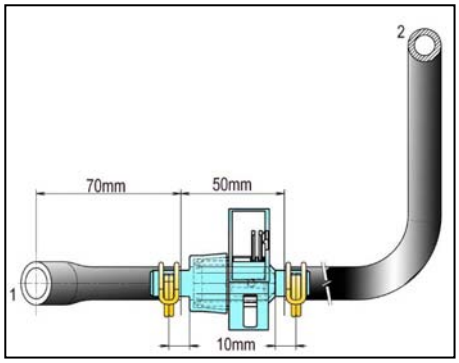


16.3 Turbidity sensor



- Disconnect the connector
- Loosen the clamps (shown by the arrows) and remove the tubes from the sensor unit.

16.3.1 Installing the turbidity sensor

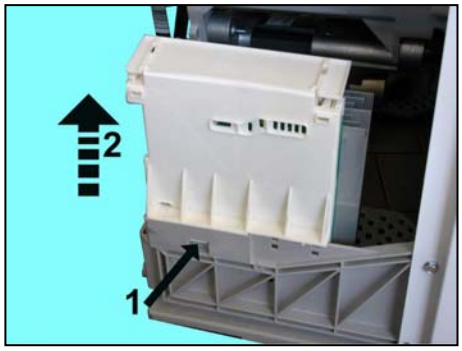


1. *Connection to recirculation pump*
2. *End that is inserted into the bellows around the door*

16.4 Motor

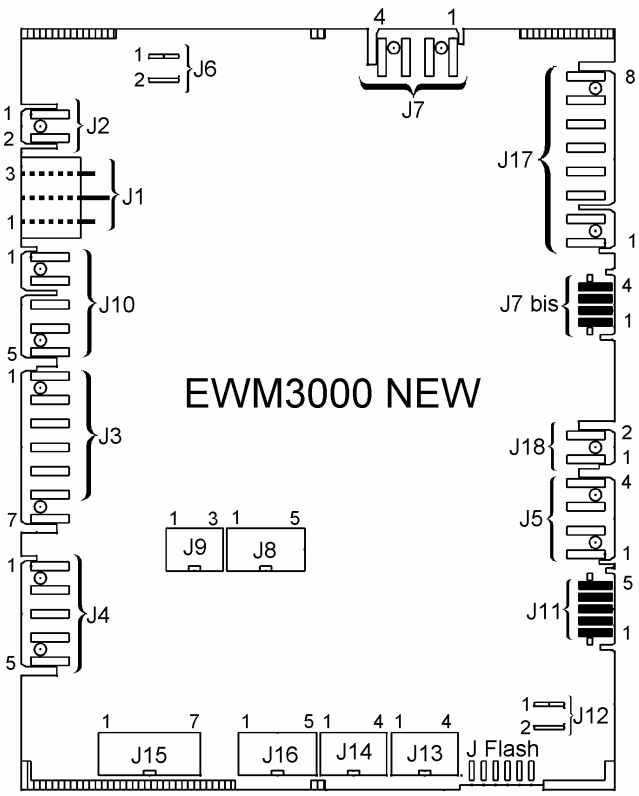
- Remove the belt from the pulley
- Disconnect the connector from the terminal block (indicated by the arrow)
- Loosen the screws that attach the motor to the wash unit

16.5 Inverter

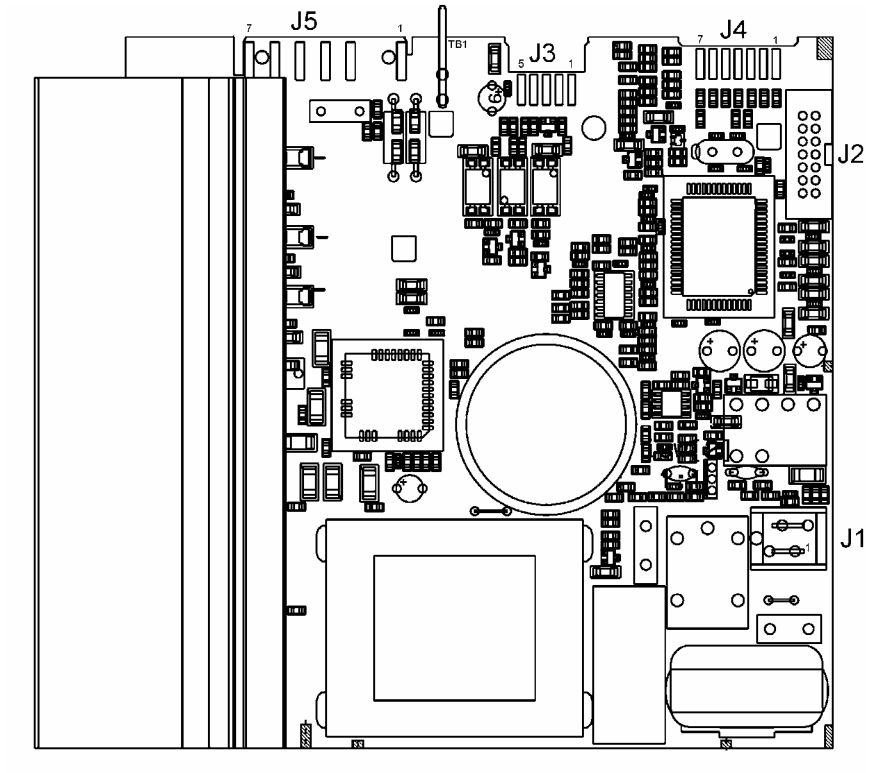


- Disconnect the connectors
- Release the fastener that attaches the unit to the base frame (1)
- Lift the unit upwards (2) to remove it.

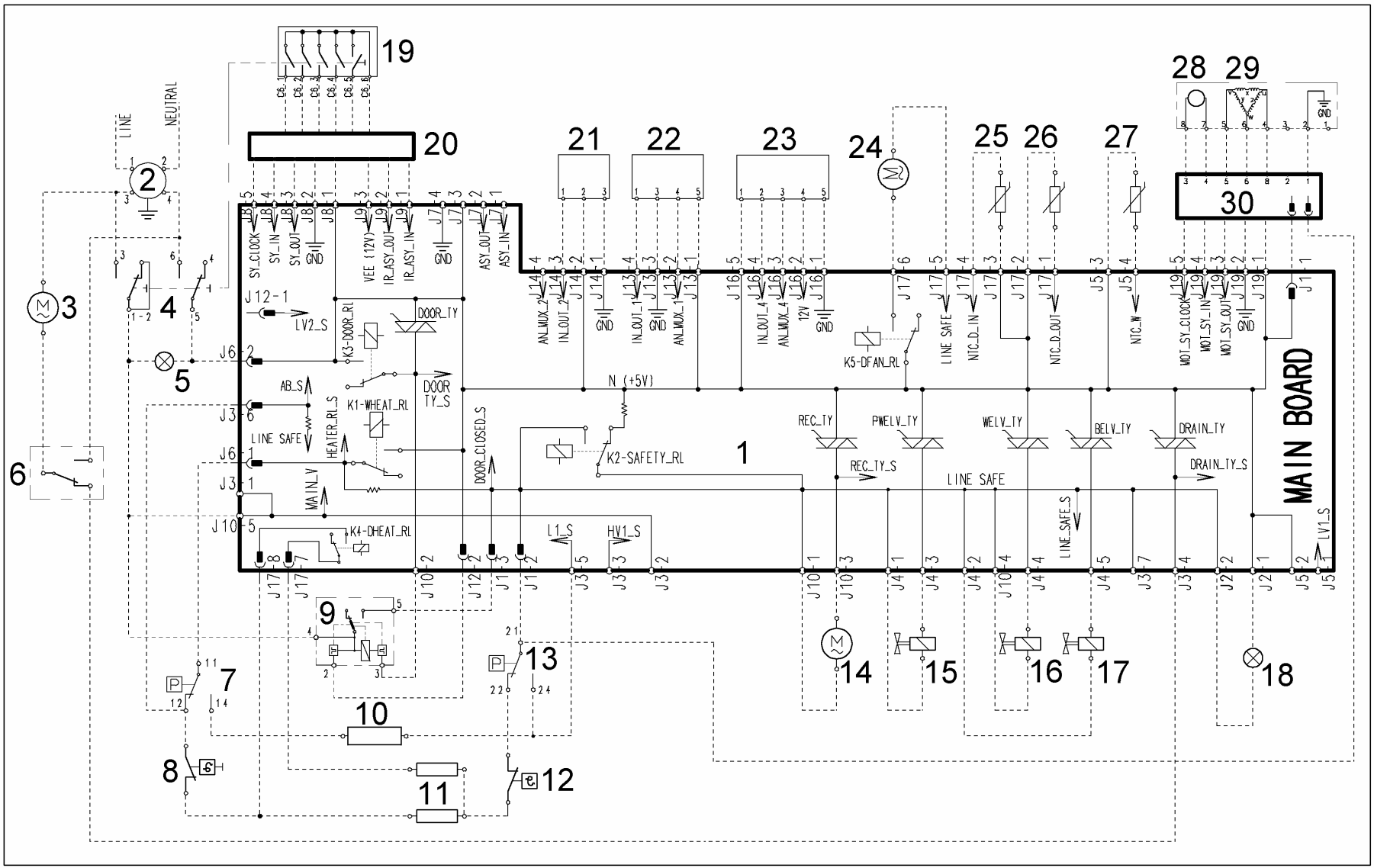
17 Contacts on Main Board



18 Contacts on inverter board



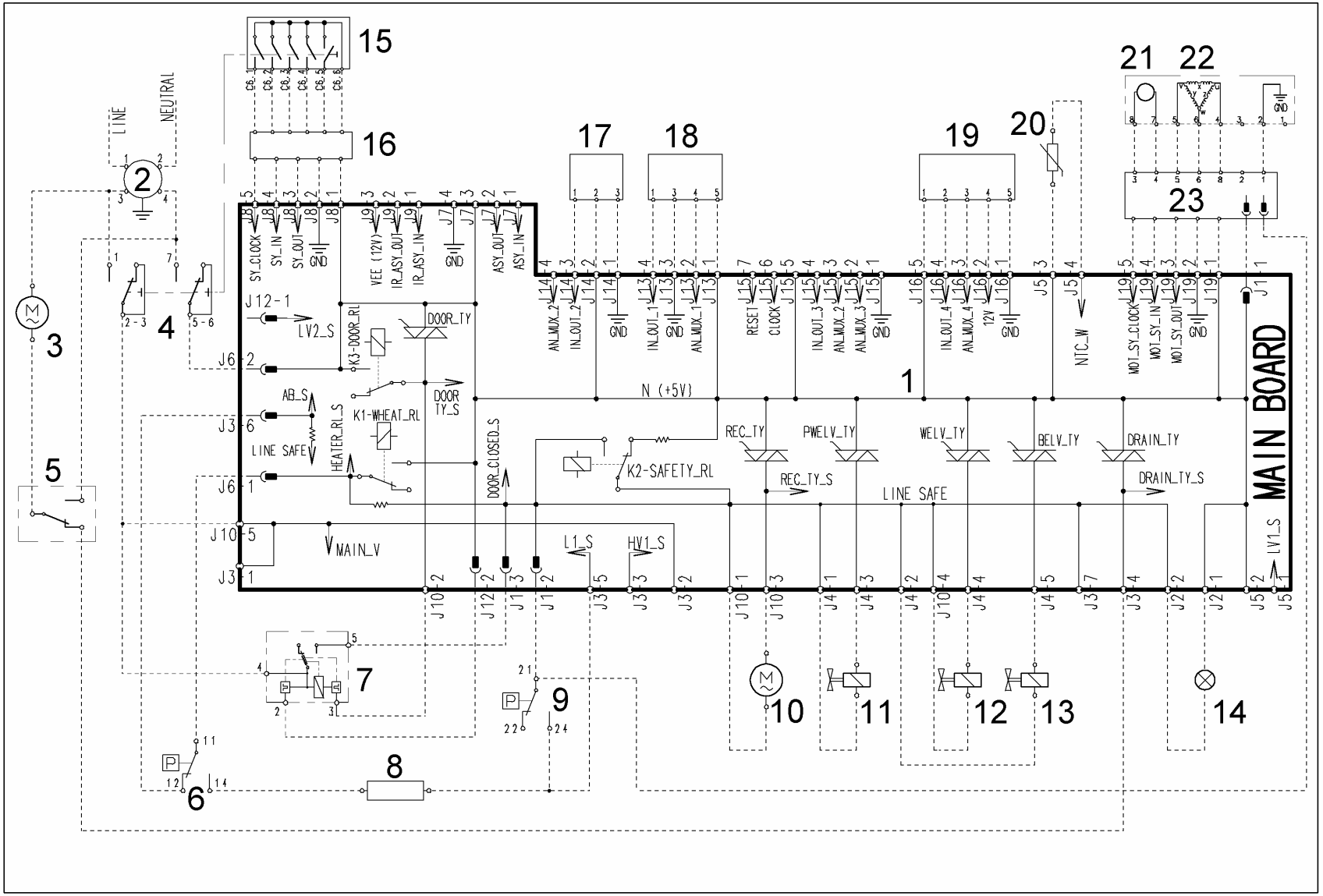
19 BASIC CIRCUIT DIAGRAM WITH SENSORS (WD)



19.1 Legend for circuit diagram (WD)

Electrical components on appliance	Components on main board	
1. Main board		
2. Interference filter	BELV_TY	Triac for solenoid valve for bleach dispenser
3. Drain pump	DOOR_TY	Triac for door lock unit
4. ON/OFF switch (built into programme selector)	DRAIN_TY	Triac for drain pump
5. Pilot lamp	K1	Relay controlling heating element
6. Aqua Control	K2	Safety relay
7. Anti-boiling pressure switch AE2	K3	Door relay
8. Manual-reset safety thermostat	K4	Drying heater relay
9. Door lock unit	K5	Fan relay
10. Washing heater	PWELV_TY	Triac for solenoid valve for prewash
11. Drying heater	REC_TY	Triac for recirculation pump
12. Auto-reset safety thermostat	WELV_TY	Triac for solenoid valve for wash
13. Anti-boiling pressure switch AE1		
14. Recirculation pump		
15. Solenoid valve for prewash		
16. Solenoid valve for wash		
17. Solenoid valve for condensation		
18. Lamp indicating door open		
19. Selector		
20. Control/display board		
21. Flow meter		
22. Analogue pressure switch		
23. Turbidity sensor		
24. Fan motor		
25. NTC temperature sensor (drying)		
26. NTC temperature sensor (humidity)		
27. NTC temperature sensor (washing)		
28. Tachometric generator (on motor)		
29. Windings (on motor)		
30. Inverter (for motor speed control)		

20 BASIC CIRCUIT DIAGRAM WITH SENSORS (WM)



20.1 Legend for circuit diagram (WM)

Electrical components on appliance	Components on main board	
1. Main board		
2. Interference filter	BELV_TY	Triac for solenoid valve for bleach dispenser
3. Drain pump	DOOR_TY	Triac for door lock unit
4. ON/OFF switch (built into selector)	DRAIN_TY	Triac for drain pump
5. Aqua Control	K1	Relay controlling heating element
6. Anti-boiling pressure switch AE2	K2	Safety relay
7. Door lock unit	PWELV_TY	Triac for solenoid valve for prewash
8. Heating element	REC_TY	Triac for recirculation pump
9. Anti-boiling pressure switch AE1	WELV_TY	Triac for solenoid valve for wash
10. Recirculation pump		
11. Solenoid valve for prewash		
12. Solenoid valve for wash		
13. Solenoid valve for bleach		
14. Lamp indicating door open		
15. Selector		
16. Control/display board		
17. Flow meter		
18. Analogue pressure switch		
19. Turbidity sensor		
20. NTC temperature sensor		
21. Tachometric generator (on motor)		
22. Windings (on motor)		
23. Inverter (for motor speed control)		